MaxPac Single/Dual/Triple Screen 8230 XRA1/2/3 Rev-A

Training and Maintenance Guide

Maintaining and Repairing Your MaxPac Single/Dual/Triple-Screen 8230 XRA1/2/3 Rev-A High-Performance Transportable Workstation

MaxVision Corporation
495 Production Avenue
Madison, AL 35758, USA

Part Number: 209-0054-0

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Regulatory Approvals

EN60950, EN55024, EN55022, FCC, Part 15, EN61000-3-2 & EN61000-3-3.

Warnings

Changes or modifications to this device that are not approved by the party responsible for compliance could void the user's authority to operate the equipment.

Each type of MaxPac system should be re-shipped only in the Pelican case and/or other packaging materials in which the system was first delivered to the customer. Damage caused by shipping systems using unapproved Pelican cases and/or other packaging materials is NOT covered by MaxVision's warranty.

To reduce the risk of electrical shock, do not attempt to open the device unless instructed to do so. Do not use any tool for purposes other than instructed.

A Lithium Ion battery is included with the system motherboard. This battery is used for the Real Time Clock (RTC) circuit. The expected lifetime of the battery is approximately 5 years. There is a danger of explosion if this battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the motherboard manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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Chapter 1: Troubleshooting Tips for 8230 XRA1/2/3 Systems

1) The MaxPac8230 has both a hard power switch (at power supply itself ---O; --- for ON) and a soft power momentary switch (on center monitor behind the display controls). If the optional UPS Power Management System is installed and the 8230 is ON then removing the AC chord or switching the hard power to O will not shut down the system. Instead the UPS system will beep and provide power through the batteries. The system must be shut down via Windows or the soft power switch for a complete shutdown to occur. Failing to do this step when packing up your system will drain your batteries.

2) When AC power is applied to the 8230 the motherboard goes into standby power mode. Some of the motherboard circuitry is powered waiting on the soft power or other low level command. When the motherboard first goes into standby (AC power applied with hard power switch ON) the 3 keyboard led's will flash green and then turn back off.

3) When the 8230 is powered on via soft power all of the display power LEDs should turn on with an orange color. During initial startup the primary display will not light-up until a good portion of the POST (Power On Self Test) sequence is complete. This time delay depends on the amount of memory present but for most systems is about 10 seconds. Then all 3 of the keyboard LED's should flash green. Usually the left keyboard LED will remain lit. If you need to get into the motherboard BIOS depress the Delete key a few times now. The BIOS will not be entered until initialization is complete including scanning of drives attached to the RAID controller.

4) At this stage if any of the display LEDs are RED (instead of Orange or Green) then the display is off. Depress the display power button (next to the display LED) to power up the display. It's LED will change from Red to Orange to Green and back to Orange if the display is not receiving a signal. The LED should stay green if receiving video signals. Also note that each display must have its input set to DVI and NOT RGB. To change the input source use the Input button on the display. The RGB input can be used if one of the display's PIP VGA inputs is connected from an external source (discussed later) and you wish to display it's data rather than the 8230 video data. Initial BIOS initialization data only will appear on the Primary PCI Express graphics board's displays. This is normally the Center and Right screens. The Left screen (if present) will show "No signal DVI" until it has been enabled in Windows. Note that the power state, input mode, etc of each display is saved for subsequent power-up cycles.

5) At this point depressing the Num Lock key (upper left of the numeric keypad) repeatedly will toggle the left keyboard LED from green to off. This indicates that the CPU and motherboard is responding to commands even if you see nothing on the displays. If nothing appears on the display(s) in order to further debug the problem the 8230 must be put into its service position as documented in chapter 4 (8230XRA1) or chapter 5 (8230XRA2/3).

6) With the 8230 in its service position refer to Figure 2-2 and find the System Status LED and Post Code LEDs. Check for proper seating of the PCI Express graphics boards (the 8230XRA3 requires a 2nd PCI-E graphics board for the left screen). Make sure the Poron is attached to the inside of the inner-chassis lid as shown in Fig 5-33. Assuming the PCI-E boards are seated observe the LEDs in Figure 2-2. With the motherboard in standby (after proper shutdown with AC applied) the System Status LED should be yellow. Also both the yellow and green POST Code LEDs should be on.

7) Now depress the soft power button to turn on your 8230. The System Status LED should turn green. The POST LEDs should sequence as follows: Yellow ON Green OFF during memory checks; Yellow OFF Green ON during system shadowing checks; Yellow ON Green ON during final CPU checks; then Both OFF just prior to the keyboard LED's flashing.

8) If after system startup the POST LED stick at the Yellow ON Green OFF state then the FBDIMM memory is not being seen. Refer to the Memory Section of chapter 4 or 5. Note that memory must be installed in pairs starting with DIMM 1A/1B (Fig 2-2). This means that a bad (or poorly seated) FBDIMM in slot 1A or 1B could cause NONE of the memory to be seen (even in slots 2A and beyond). Note that slots 3A and 4A do not require population in pairs (but must be in order). Memory failures are sometimes just seating problems so reseating is worth trying. If memory is still failing and you have 4 FBDIMM then try each set in just slots 1A and 1B (1A/1B bank must be populated in all cases).

9) If you are still not getting video and both POST LEDs are off you could have several video related problems. Unfortunately the motherboard will allow a boot all the way into Windows with the PCI-E graphics not present or bad. Assuming neither the middle nor right displays are not getting valid video the fault is probably with the primary PCI-E graphics card. For 8230XRA3 systems (assuming you do not have a spare PCI-E board) you could temporarily remove the primary PCI-E graphics board. Now the secondary PCI-E board (for the left display) should become the primary display for the BIOS and Windows.

10) Assuming you now have video displaying on your middle and right screen you should see the 3ware BIOS scan for the RAID array and then boot into Windows. If you are sure a valid image exists on the RAID array (or individual system disk connected to the motherboard) and you still see “Operating System not found” a Boot order problem likely exists.

11) Reboot your system and use the delete key to enter the BIOS. Use the arrow keys to go to the Boot section. Now check your boot order. Make sure that your IDE CD is listed before the 3ware Storage Controller in the upper part of the screen (listed 1-8). Note that if your system disk is connected directly to the motherboard it should be listed before the 3ware. If you have connected a USB disk or memory stick it may be listed ahead of your boot disk. Move it behind your boot disk in this case.

Chapter 2: Motherboard Diagrams

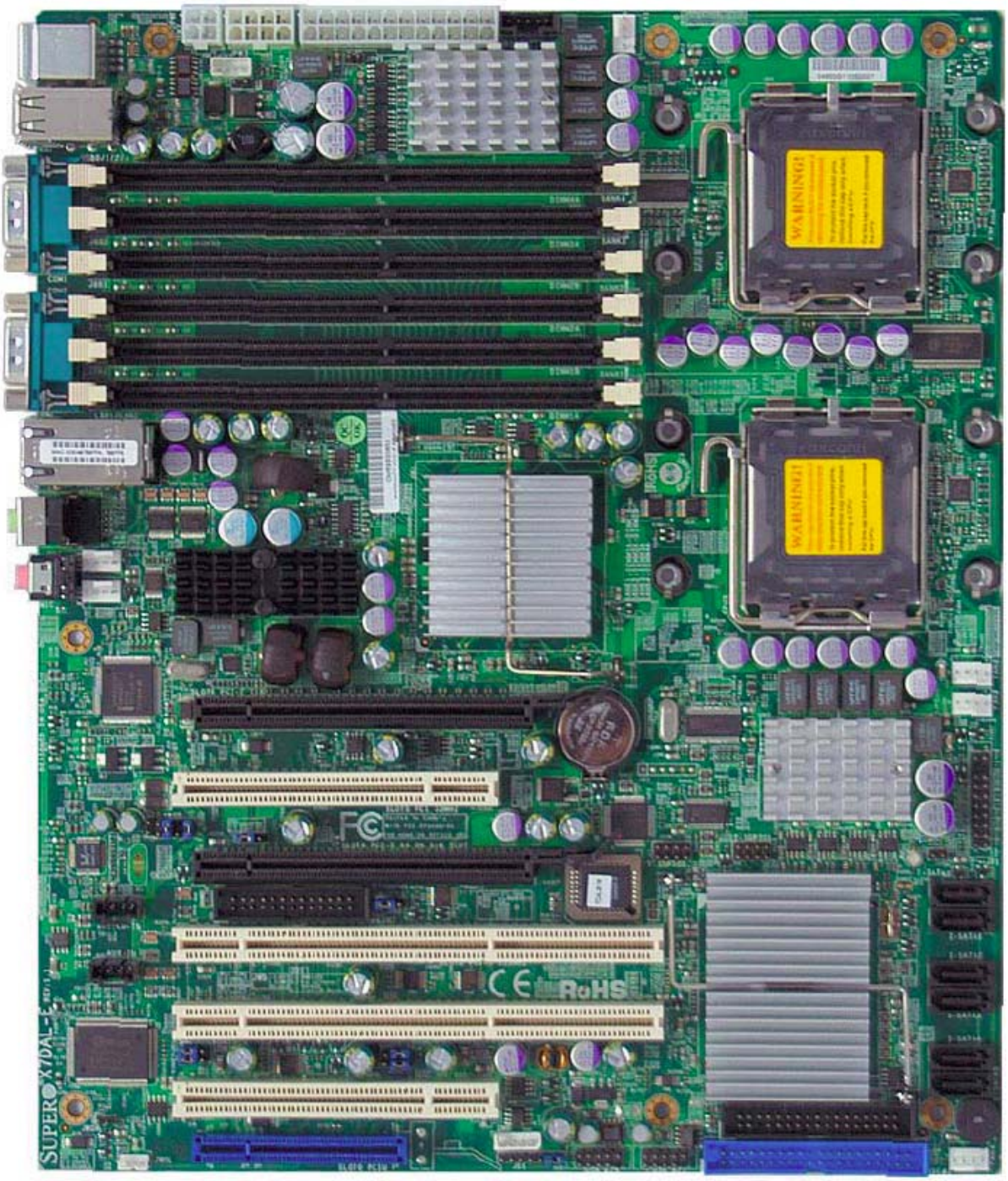


Figure 2-1. Top-down view of the X7DAL-E motherboard.

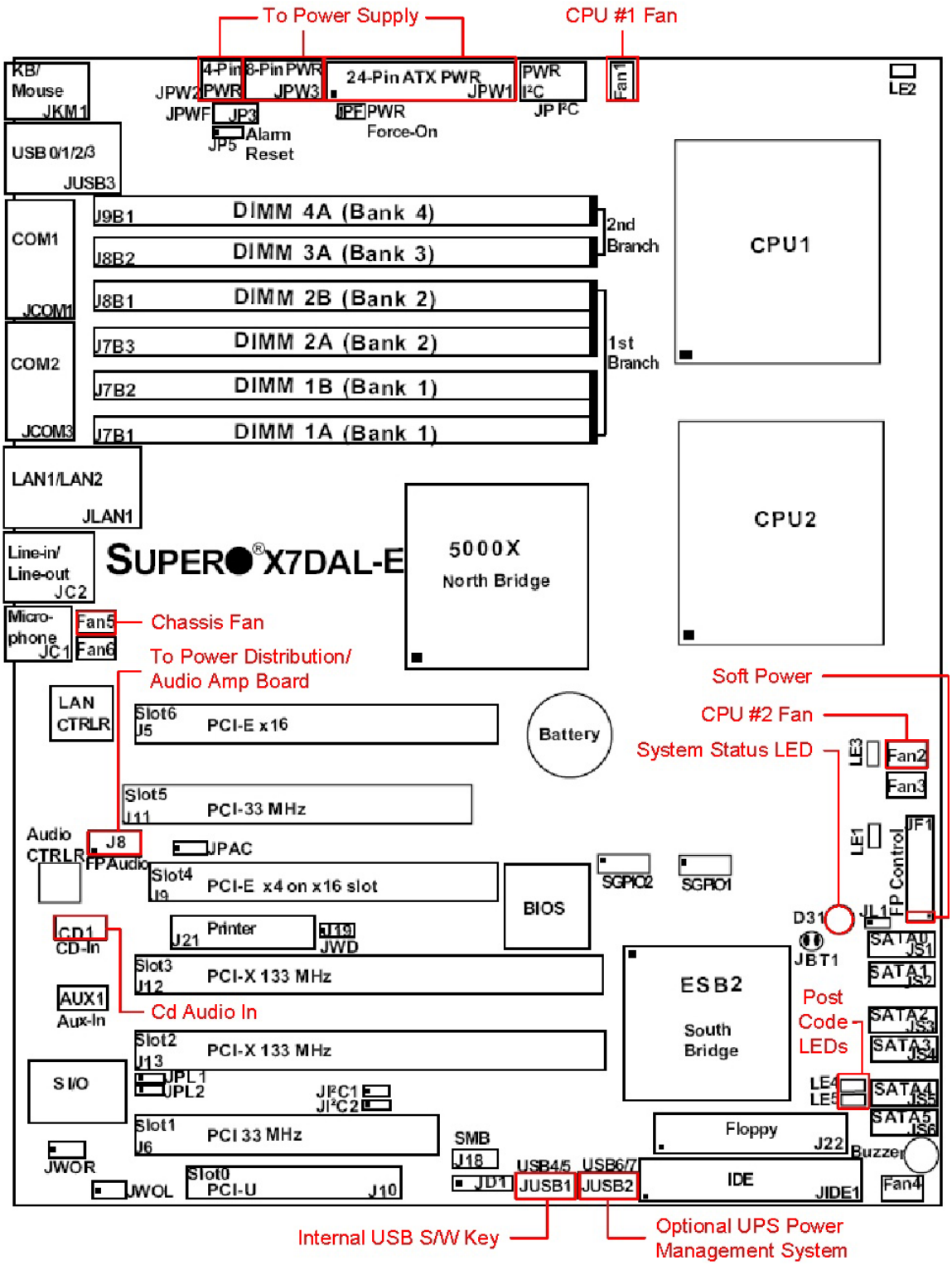


Figure 2-2. Cable connections and LEDs on the X7DAL-E motherboard.

Chapter 3: Setting-Up the Software/Devices/Network/RAID Array

Setting-Up the Network

In the majority of environments, it is sufficient to use the Windows XP defaults for the network. Simply connect the network cable (Figure 3-1) and the system should auto-detect the presence of the network and the data/communications light next to the network cable connector should start to flash.

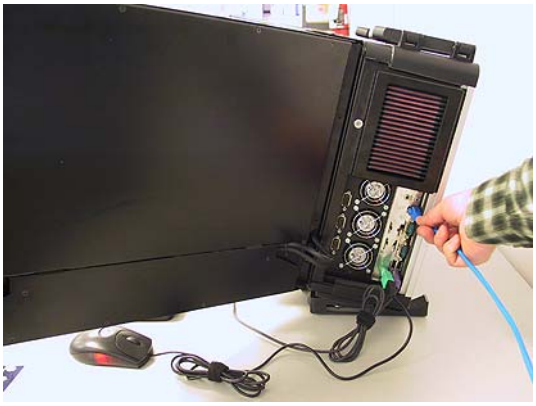


Figure 3-1. Connecting the network cable

The easiest way to test your network connection is to invoke your web browser and visit a website such as **www.MaxVision.com**. In the event of any problems or special requirements, you should first consult your on-site IT representative (if the problems persist, contact MaxVision support as discussed in *Appendix D*).

Setting-Up the Graphics

When you receive your MacPac dual/triple-screen X-Class system, you will find that the graphics subsystem has been pre-installed with the following (recommended) characteristics:

- **Color Quality:** Highest (32-bit)
- **Resolution:** 1, 2, or 3 x 20.1” displays: 1600 x 1200

Irrespective of the configuration, the graphics on your system will have been custom pre-configured to suite your particular requirements.

MaxPac systems are available with a variety of different graphics cards depending on your unique application. The standard configuration for a triple-screen system, for example, is to have the center and right-hand displays controlled by a PCI Express-based NVIDIA Quadro FX4500 graphics card, while the left-hand display and projector port are controlled by a second PCI Express-based NVIDIA Quadro FX-series board.

Note: OpenGL™ acceleration is now available all displays controlled by the PCI Express-based NVIDIA Quadro FX series controllers. This allows the user to run applications requiring OpenGL acceleration on all displays as long as all are controlled by the same NVIDIA Graphics driver.

If you do have a special graphics card, you may consult the manual associated with this card (this manual will be included in your documentation package as discussed in Chapters 1 and 2) or contact MaxVision support (as discussed in *Appendix D*) for more information.

Adjusting the Screens

In the case of a dual-display or triple-display configuration, each screen has a set of controls mounted on the top of the display (Figure 3-2). (In the case of a single-display system, these controls are located on the left-hand side of the unit next to the CD/DVD optical drive.)

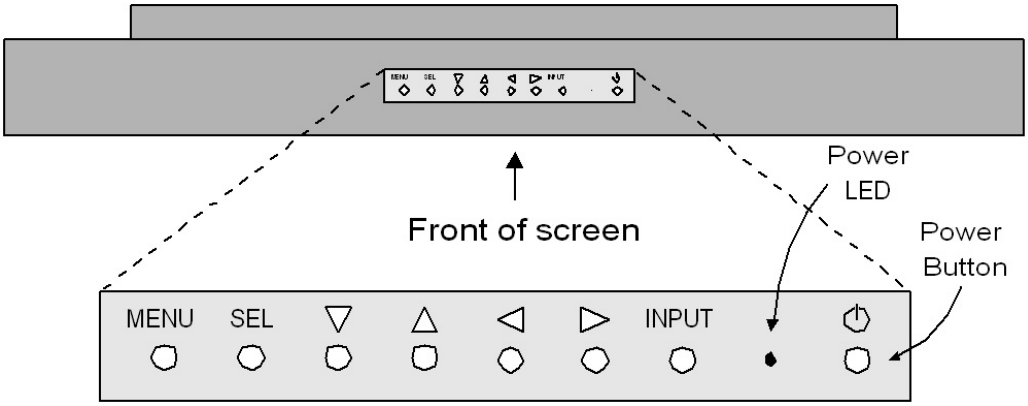


Figure 3-2. Top-down view of screen controls on dual- and triple-display systems

Observe the power button located to the right of the power light-emitting diode (LED). This is an independent power button for the display/screen.

Pressing the **MENU** button will bring up a series of items on the screen. Use the up/down buttons to move between these items; press and release the **SEL** button to select that item; and use the right/left buttons to vary the settings.

Some custom configurations allow the display to be driven from multiple sources. In this case, pressing the **INPUT** button selects between digital and analog inputs. These custom configurations will come equipped with a special documentation addendum that details the actions of the **INPUT** button; in the case of standard configurations, the source should always be set to “Digital.”

Setting Up Video Input for Picture-in-Picture (Dual- and Triple-Screen Configurations Only)

In the case of a MaxPac 8230 XRA2 (dual-screen) system, the right-hand monitor supports multiple inputs: the default DVI-I input from the system and an external VGA input that can be used for picture-in-picture monitoring purposes. Similarly, in the case of a MaxPac 8230 XRA3 (triple-screen) system, both the left- and right-hand monitors support this capability.

1) Observe the VGA connector associated with the left-hand screen (Figure 3-3). The external video source would be fed into this connector as shown for the right-hand screen (Figure 3-4).

Note: For the purposes of this example, the video signal being used as input to the right-hand screen originates from another PC. In reality, this input could come from any VGA video source with a resolution no higher than 1024 x 768.

Figure 3-3

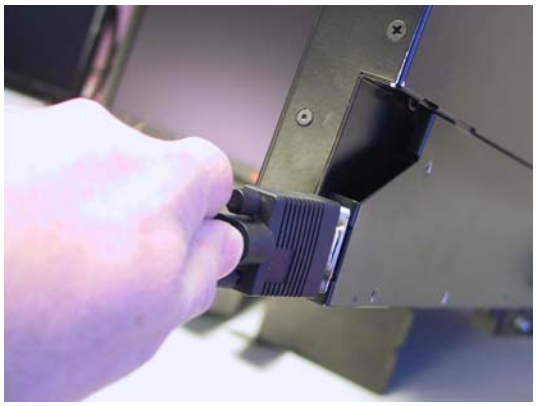


Figure 3-4

2) In order to access the external video source, press the **Menu** button in the controls mounted on the top of that display (Figure 3-2), and then use the left/right arrow buttons on this control panel to access the Picture-in-Picture dialog (Figure 3-5)

Figure 3-5

Figure 3-6

3) Use this dialog to turn the Picture-and-Picture window **On/Off** and to specify characteristics such as the size and position of the Picture-and-Picture window (located in the lower right-hand corner of the screen in Figures 3-5 and 3-6.)

Note: The video source and the Picture-in-Picture window must be set to the same resolution, which must be less-than or equal-to 1024 x 768.

Configuring the RAID Array (with Separate System Drive)

Note: Your MaxPac8230 may be configured for connection to the optional TeraPac3 8 drive SATA Expansion. In this case the MaxPac8230 will include a 12 or 16 port SATA RAID 5 controller. This chapter illustrates and assumes a 4 port SATA RAID 5 controller so the photos may be somewhat different. Refer to Chapter 7 for a brief section on the MaxPac8230 connection to the TeraPac3 and to the TeraPac3 User Operation and Maintenance Guide for more details.

Note that these discussions reflect system configurations with a separate system drive as illustrated in Figures 3-7 and 3-8). Configurations that have the system partition established on the RAID array itself (leaving a hot-spare drive) are discussed later in this chapter.

When you take possession of your MaxPac 8230 system, the RAID system will already have been established, initialized, and verified. The instructions in this section are intended to address those rare situations where you need to replace a degraded/failed drive or you wish to rebuild the RAID system from the ground up.

Your MaxPac system can contain up to four SATA hot-swappable hard disk drives presented in a 4-drive disk caddy. This caddy is located on the lower left-hand side of the main chassis under the "Baghdad Filter" assembly as shown in Figure 3-7 (the numbering of the disks is as shown in Figure 3-8). In the case of a typical RAID 5 system, the upper disk is the system disk, while the lower three disks are used to implement the RAID data array.

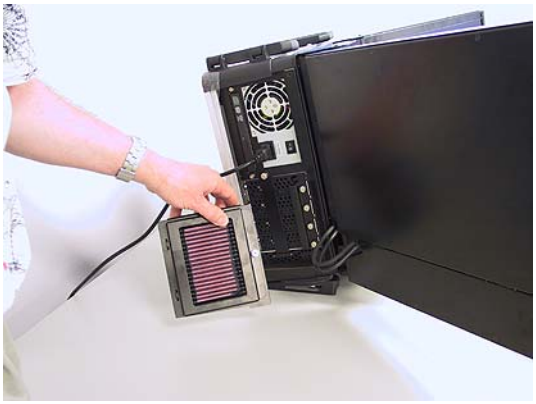


Figure 3-7

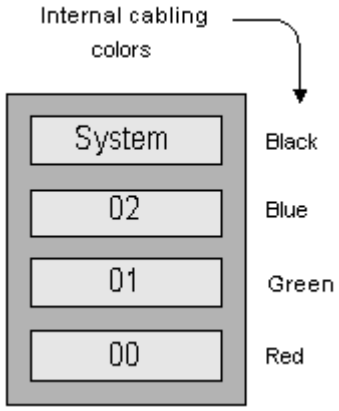


Figure 3-8

Installing the Web-Based 3ware Software

If you reload your operating system, then you will also need to reload the appropriate RAID driver followed by 3ware's *3DM 2* web-based RAID management application as follows:

1) Power-up the system. The operating system will see the RAID controller as a new device and will therefore prompt you to load the appropriate driver from the 3ware CD, which is provided with your system.
2) Insert the 3ware CD. The auto-play function will bring up the **3ware Escalade Menu** as shown in Figure 3-9. Initially you should ignore this menu; don't dismiss it, but instead use the operating system's **Device Manager** utility to look for the 3ware driver on the CD and install it.
3) Once the 3ware driver has been loaded, return to the **3ware Escalade Menu** and click the **Install 3DM 2** button.
4) Approve the license agreement in the ensuing pop-up dialog.

5) Following acceptance of the license agreement, you may be presented with the operating system's standard **Welcome to New Connection Wizard** dialog. In this case, use this dialog to setup your network connection.

6) Following this wizard, 3ware's 3DM 2 software will be installed (when prompted to do so, allow the installation script to place a 3DM 2 icon on your desktop).

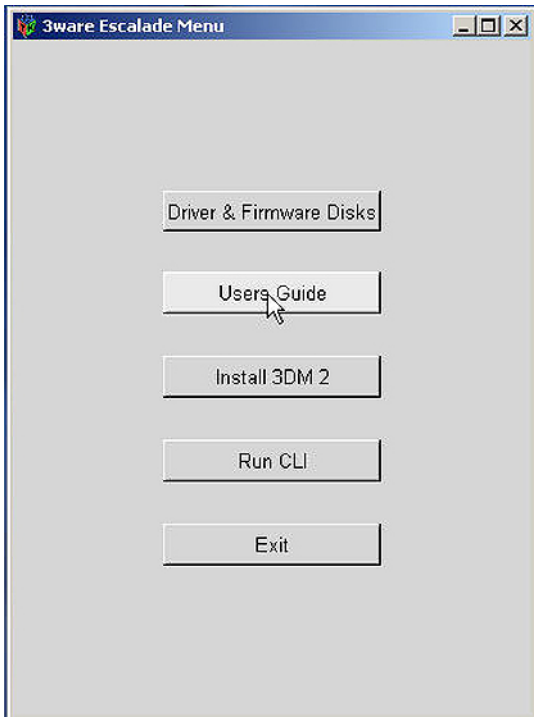


Figure 3-9

Building a New 3ware RAID 5 Array from Scratch

The discussions in this section assume that you have an existing system disk and – for one reason or another – have installed three new/empty data disks.

1) Start to power-up the system. When you see the BIOS message *"<Alt-3> to access 3ware BIOS Manager"* (Figure 2-10) press and hold the <ALT> (alternate) key and – while still holding this key – press the number "3" key. This will invoke the 3ware BIOS manager; in most cases, you will be presented with a warning screen as shown in Figure 3-11.

Press <Alt-3> to access 3ware BIOS Manager
3ware Serial ATA RAID Controller: 9550SX-4LP
BIOS: BE9X 3.01.00.024 Firmware: FE9X 3.01.01.020 Slot: 3
BBU Status: Not Present
Number of online units: 0, available drives: 3, hot spares: 0, offline units: 0
Available drives:
Port 0 ST3500641AS 465.76 GB
Port 1 ST3500641AS 465.76 GB
Port 3 ST3500641AS 465.76 GB

Figure 3-10

3ware BIOS manager (slot3)
Disks have existing data?
When you configure your disk array(s), existing data on some drives may be overwritten.
When you hit the Done key, you will be notified which drives will be overwritten and offered the option of abandoning the new settings before any data is lost.
If you are concerned about losing data, hit Escape to stop configuring and back up your drives first.
Press any key to continue.

Figure 3-11

2) Press any key to continue, which will take you fully into the **3ware BIOS Manager**. Observe that the **Create Unit** option is selected by default. Use <Alt-A> to select all of the drives; asterisk "*" characters appear to the left of each drive's port number to indicate that the drive has indeed been selected (Figure 3-12)

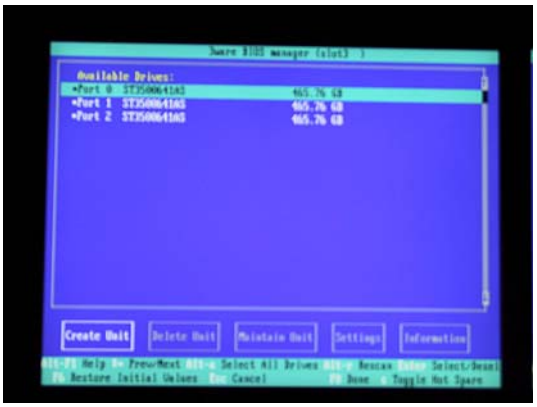


Figure 3-12

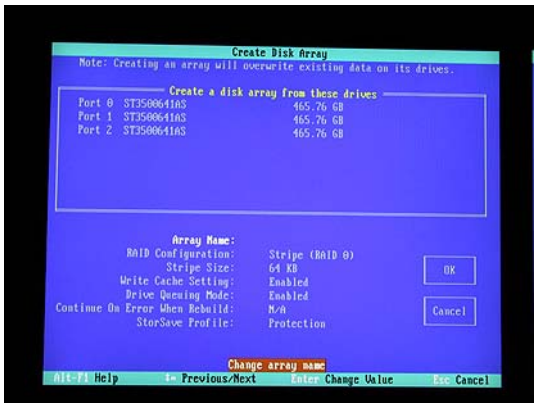


Figure 3-13

3) Ensure that the **Create Unit** item is still selected (the white box shown to the bottom left of the screen in Figure 2-12), and then press the <Enter> key to invoke the Create Disk Array screen (Figure 3-13).

4) Use the up/down arrow keys to highlight the **RAID Configuration** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-14).

5) Use the up/down arrow keys to highlight the **RAID 5** option, and then press the <Enter> key to select this option.

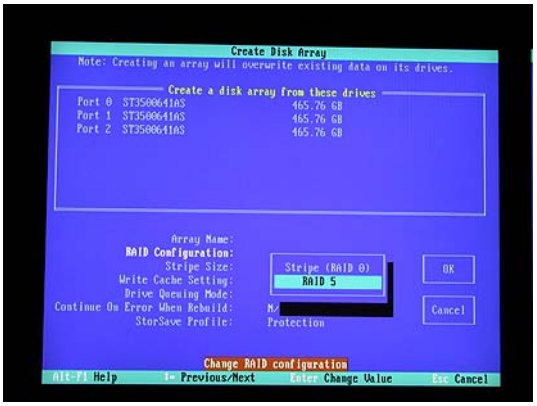


Figure 3-14

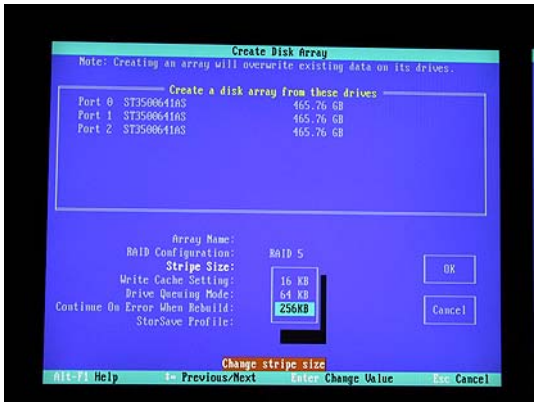


Figure 3-15

6) Use the up/down arrow keys to highlight the **Stripe Size** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-15).

7) Use the up/down arrow keys to highlight the **256 KB** option, and then press the <Enter> key to select this option.

8) Use the up/down arrow keys to highlight the **Write Cache Setting** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-16).

9) Use the up/down arrow keys to highlight the **Enabled** option, and then press the <Enter> key to select this option.

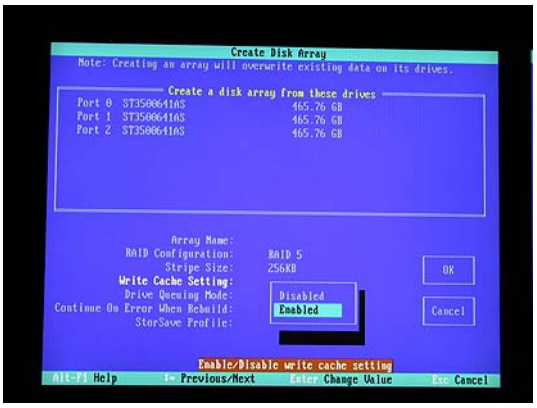


Figure 3-16

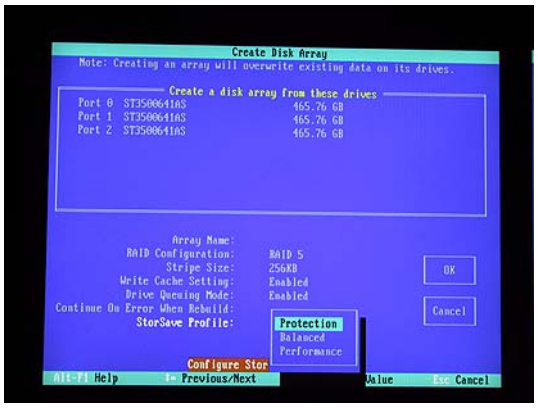


Figure 3-17

10) Use the up/down arrow keys to highlight the **StorSave Profile** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-17).

11) Use the up/down arrow keys to highlight the **Protection** option, and then press the <Enter> key to select this option.

12) Use the up/down/right/left arrow keys to highlight the **OK** item (Figure 3-18) and then press the <Enter> key to save your changes.

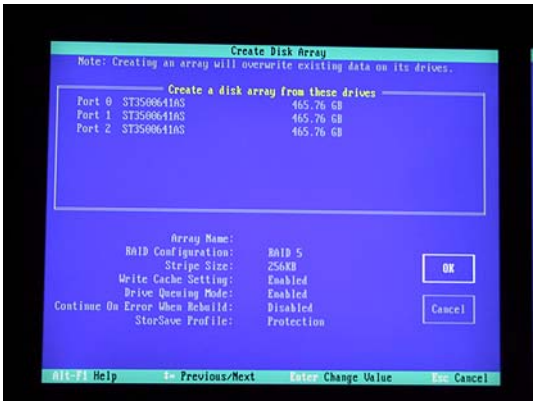


Figure 3-18

Create Disk Array
Note: Creating an array will overwrite existing data on its drives.
Create a disk array from these drives
Port 0 ST3500641AS 465.76 GB
Port 1 ST3500641AS 465.76 GB
Port 2 ST3500641AS 465.76 GB
You do not have a battery backup unit installed, enabling write cache may cause loss of data in the event of power failure.
Do you want write cache to be enabled? (Y/N)
Drive Queuing Mode: Enabled
Continue On Error When Rebuild: Disabled
StorSave Profile: Protection
OK
Cancel
Alt-F1 Help
Previous/Next
Change Value
Cancel

Figure 3-19

13) You will be presented with a warning dialog as shown in Figure 3-19. Press the **Y** (yes) to allow the write cache to be enabled (note that this mode significantly improves performance, but it can result in a loss of data in the event of a power failure, so MaxVision STRONGLY recommends the use of an uninterruptible power supply (UPS) with your system).

14) At this point, you will be presented with a summary description of the RAID array you have defined (Figure 3-20).

15) Press the <F8> key to request that your array be established and to exit the 3ware BIOS setup utility.

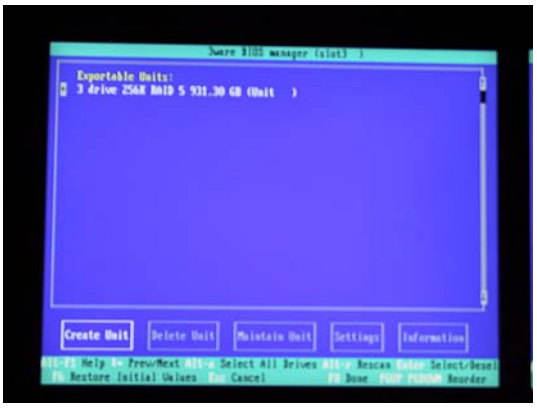


Figure 3-20

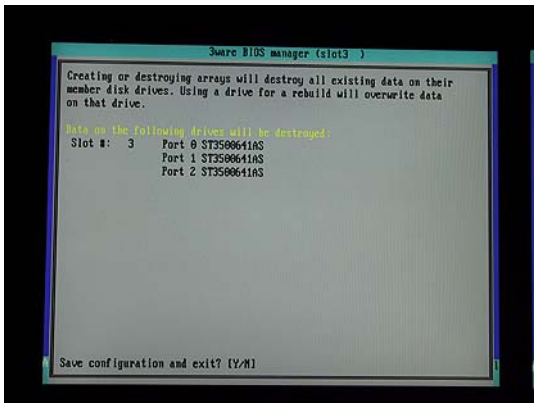

3ware BIOS manager (slot3)
Creating or destroying arrays will destroy all existing data on their member disk drives. Using a drive for a rebuild will overwrite data on that drive.
Data on the following drives will be destroyed:
Slot 3: Port 0 ST3500641AS
Port 1 ST3500641AS
Port 2 ST3500641AS
Save configuration and exit? [Y/N]

Figure 3-21

16) You will be presented with a warning screen as shown in Figure 3-21. Press the Y (yes) key in order to establish your array and exit the 3ware BIOS setup utility. The system will automatically reboot itself in order to make your new RAID array available to the operating system. During the boot process you will see the BIOS report the existence of your new RAID array.

17) Once the system has booted up into Windows®, right-click on the **My Computer** icon and then select the **Manage** option. In the ensuing **Computer Management** dialog, click on the **Disk Management** item. As you have just created a new RAID array, this will automatically launch the **Initialize and Convert Disk Wizard** as shown in Figure 3-22.

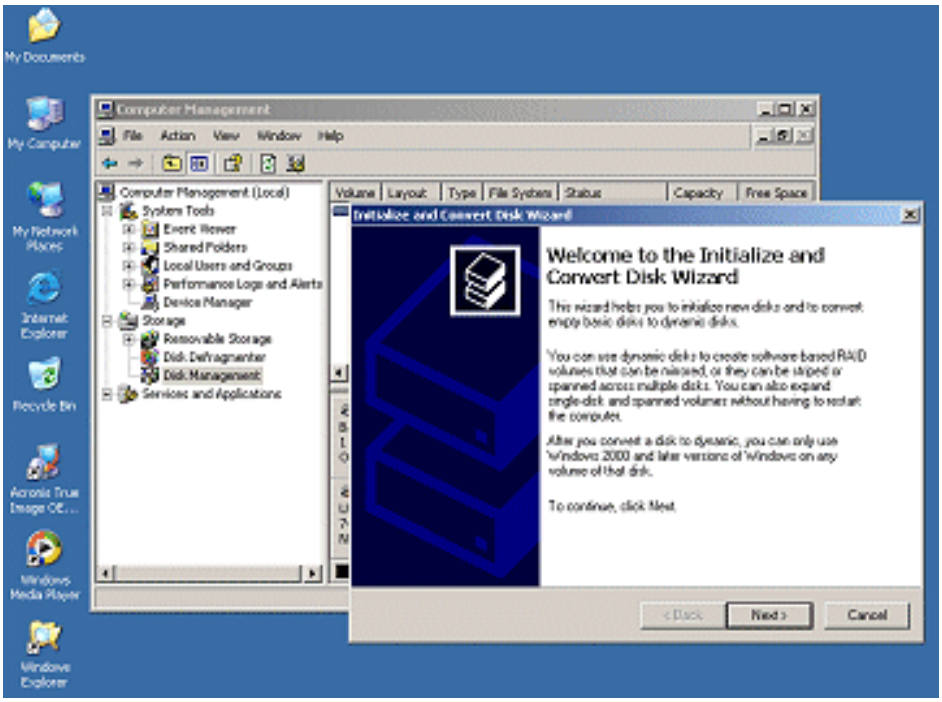

Computer Management
Initialize and Convert Disk Wizard
Welcome to the Initialize and Convert Disk Wizard
To continue, click Next.
< Back
Next >
Cancel

Figure 3-22. The Initialize and Convert Disk Wizard

18) Click the **Next** button to be presented with the **Select Disk to Initialize** screen. Click the **Disk 1** item as shown in Figure 3-23.

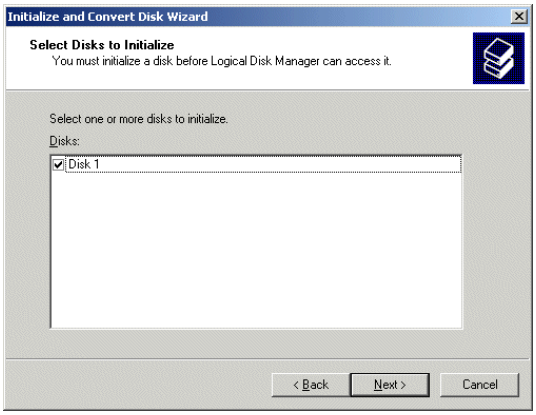

Initialize and Convert Disk Wizard
Select Disks to Initialize
You must initialize a disk before Logical Disk Manager can access it.
Select one or more disks to initialize.
Disks:
Disk 1
< Back
Next >
Cancel

Figure 3-23

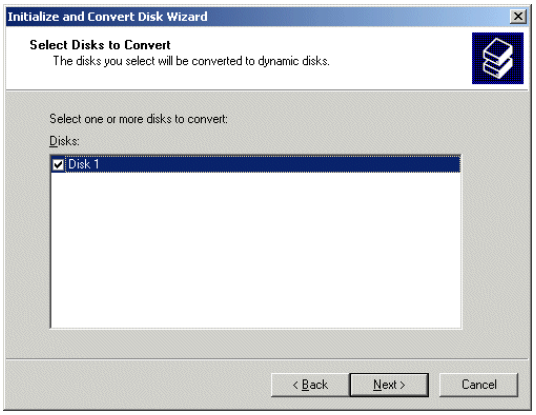

Initialize and Convert Disk Wizard
Select Disks to Convert
The disks you select will be converted to dynamic disks.
Select one or more disks to convert:
Disks:
Disk 1
< Back
Next >
Cancel

Figure 3-24

19) Click the **Next** button to be presented with the **Select Disk to Convert** screen. Click the **Disk 1** item as shown in Figure 3-24.

20) Click the **Next** button to be presented with the **Completing the Wizard** screen as shown in Figure 3-25, and then click the **Finish** button to perform the operations and exit the wizard.

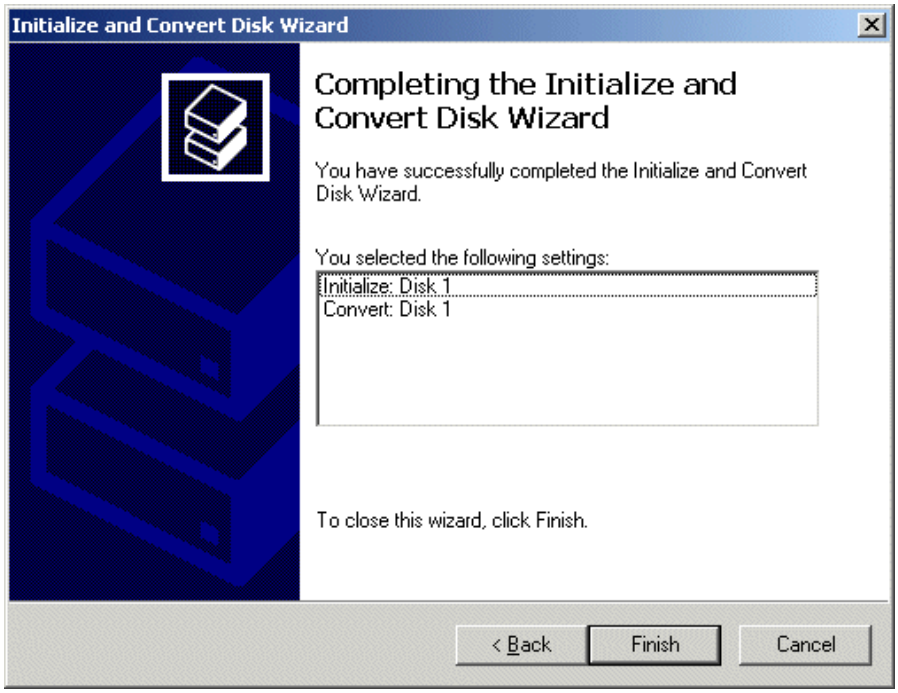

Initialize and Convert Disk Wizard
Completing the Initialize and Convert Disk Wizard
You have successfully completed the Initialize and Convert Disk Wizard.
You selected the following settings:
Initialize: Disk 1
Convert: Disk 1
To close this wizard, click Finish.
< Back
Finish
Cancel

Figure 3-25. The Completing the Wizard dialog

21) Observe that the **Disk Management** area of the **Computer Management** dialog now shows **Disk 1** as being a Dynamic disk that is – as yet – unallocated as shown in Figure 3-26.

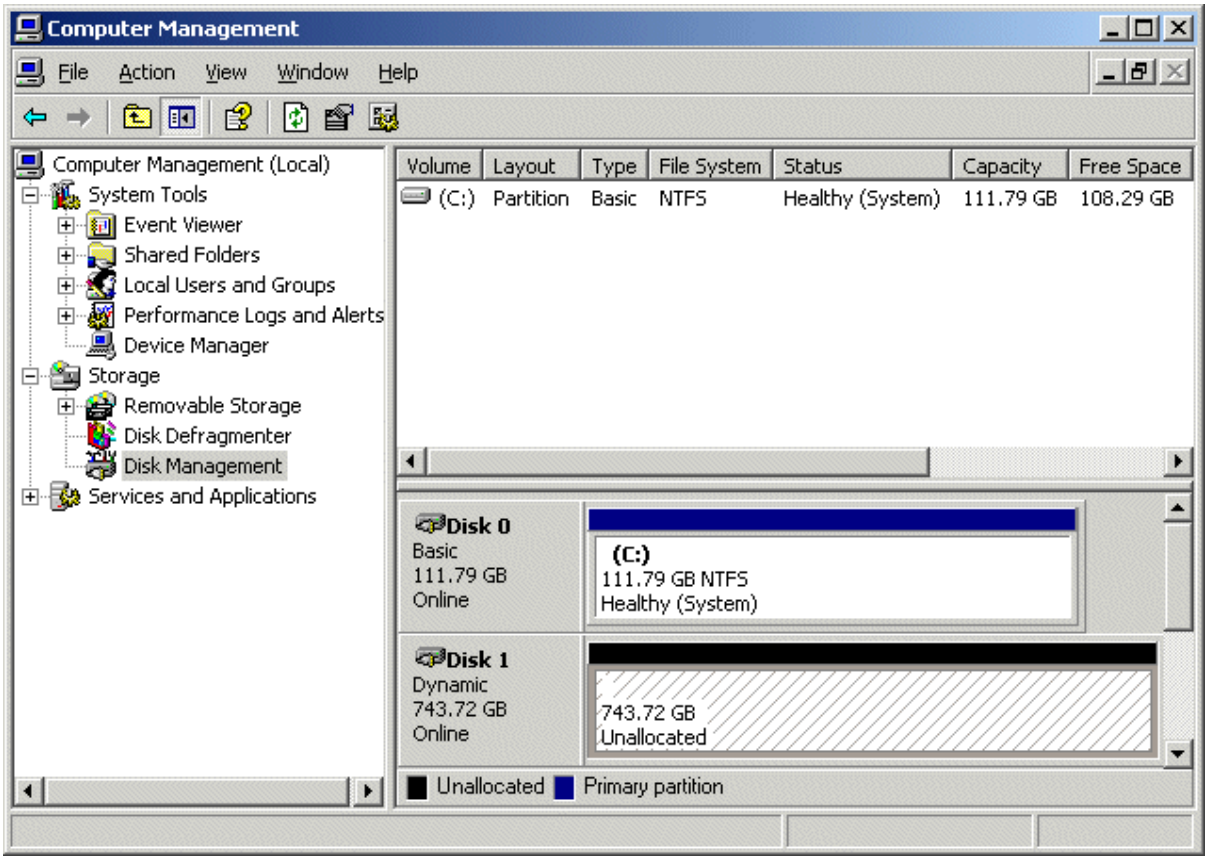


Figure 3-26. Disk 1 is – as yet - unallocated

Note: In the case of the system used in this example, the system disk was 120 GB in size, while the three data disks used to form the RAID array were each 400 GB in size.

Observe in Figure 3-26 that **Disk 1** is shown as being approximately 800 GB in size, where 800 GB equates to 2/3 of the 3 x 400 GB capacity of the data disks (the remaining 400 GB is used to provide the RAID 5 redundancy).

22) Now, right-click on the **Disk 1** item in the lower-right-hand portion of the screen, and then select the **New Volume** option from the ensuing pop-up menu as shown in Figure 3-27.

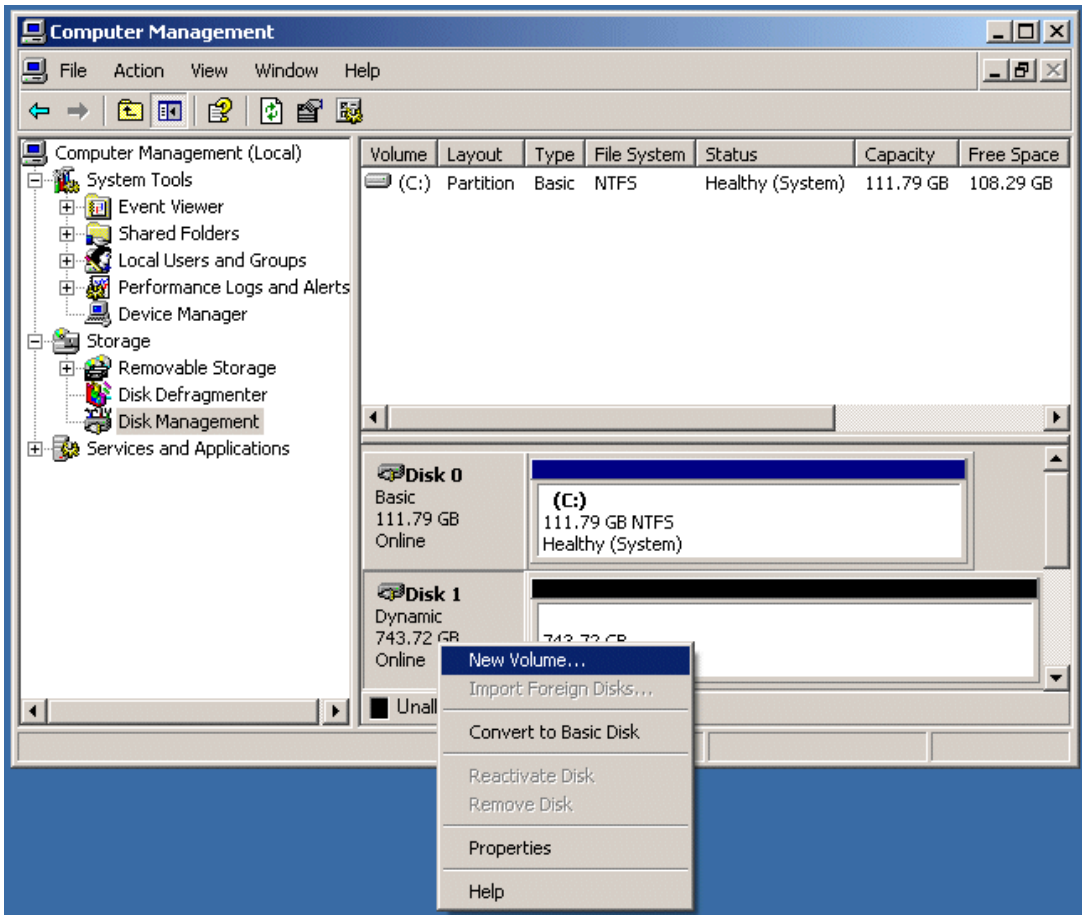


Figure 3-27. Select the New Volume option

23) Observe the **New Volume Wizard** appear as shown in Figure 3-28.

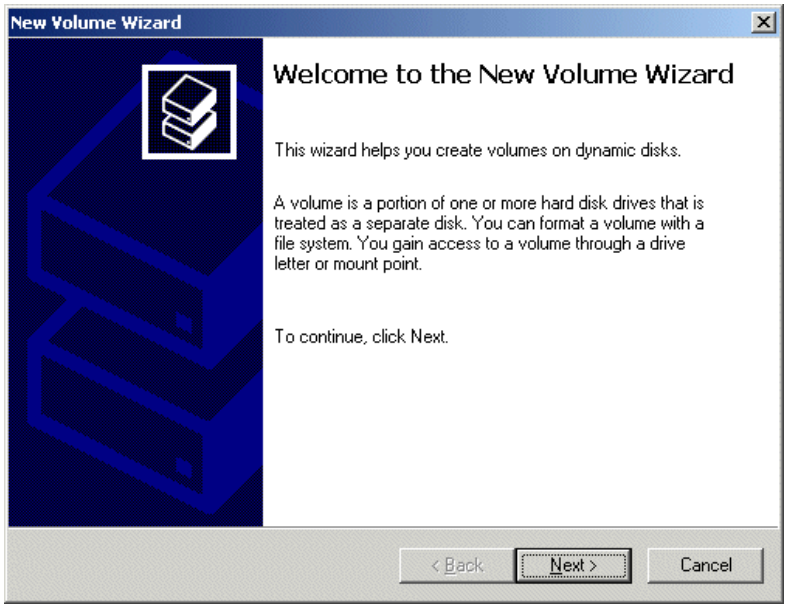

New Volume Wizard
Welcome to the New Volume Wizard
This wizard helps you create volumes on dynamic disks.
A volume is a portion of one or more hard disk drives that is treated as a separate disk. You can format a volume with a file system. You gain access to a volume through a drive letter or mount point.
To continue, click Next.
< Back
Next >
Cancel

Figure 3-28. The New Volume Wizard

24) Click the **Next** button to be presented with the **Select Volume Type** screen. Click the **Simple** option as shown in Figure 3-29.

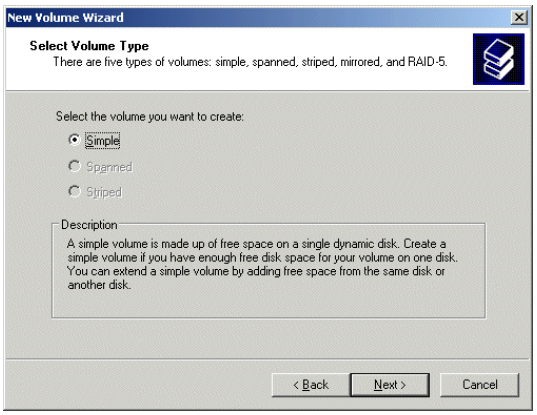

New Volume Wizard
Select Volume Type
There are five types of volumes: simple, spanned, striped, mirrored, and RAID-5.
Select the volume you want to create:
Simple
Spanned
Striped
Description
A simple volume is made up of free space on a single dynamic disk. Create a simple volume if you have enough free disk space for your volume on one disk. You can extend a simple volume by adding free space from the same disk or another disk.
< Back
Next >
Cancel

Figure 3-29

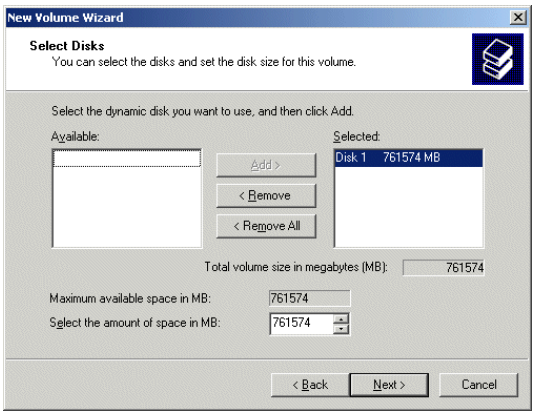

New Volume Wizard
Select Disks
You can select the disks and set the disk size for this volume.
Select the dynamic disk you want to use, and then click Add.
Available:
Selected:
Disk 1 761574 MB
Add >
< Remove
< Remove All
Total volume size in megabytes (MB): 761574
Maximum available space in MB: 761574
Select the amount of space in MB: 761574
< Back
Next >
Cancel

Figure 3-30

25) Click the **Next** button to be presented with the **Select Disk** screen. Ensure that the **Disk 1** item is selected and appears in the **Selected** column on the right-hand side of the dialog as shown in Figure 3-30.

26) Click the **Next** button to be presented with the **Assign Drive Letter or Path** screen. Ensure that the **Assign the Following Drive Letter** item is selected and accept the default letter presented by the system (or enter a different letter if you require) as shown in Figure 3-31.

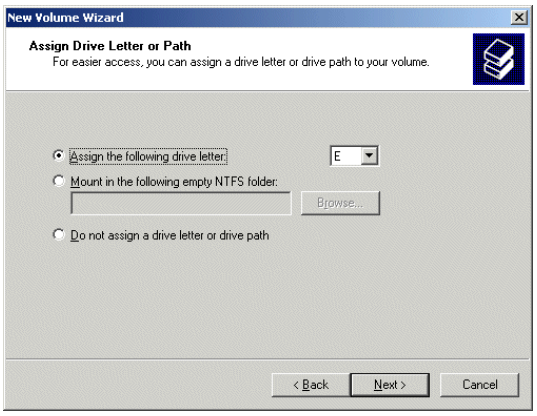

New Volume Wizard
Assign Drive Letter or Path
For easier access, you can assign a drive letter or drive path to your volume.
Assign the following drive letter: E
Mount in the following empty NTFS folder:
Browse...
Do not assign a drive letter or drive path
< Back
Next >
Cancel

Figure 3-31

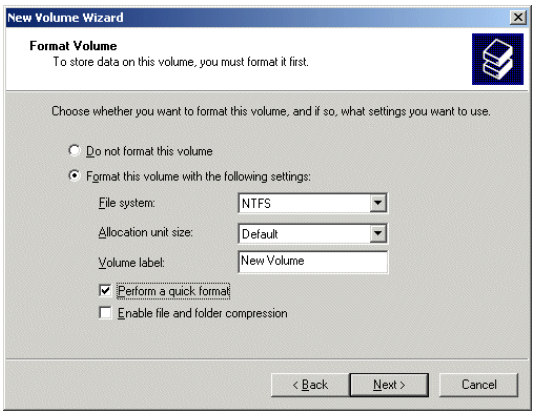

New Volume Wizard
Format Volume
To store data on this volume, you must format it first.
Choose whether you want to format this volume, and if so, what settings you want to use.
Do not format this volume
Format this volume with the following settings:
File system: NTFS
Allocation unit size: Default
Volume label: New Volume
Perform a quick format
Enable file and folder compression
< Back
Next >
Cancel

Figure 3-32

27) Click the **Next** button to be presented with the **Format Volume** screen. Click the **Format this volume with the following settings** item as shown in Figure 3-32. Ensure that the settings are **File system** = **NTFS**, **Allocation unit size** = **Default**, and **Volume Label** = user defined (the default is "New Volume"). Also ensure that the **Perform a quick format** item is selected.

28) Click the **Next** button to be presented with the **Completing the New Volume Wizard** screen as shown in Figure 3-33.

29) Click the **Finish** button to perform all of the operations and exit the wizard.

30) Observe that the **Disk Management** area of the **Computer Management** dialog now shows **Disk 1** as being **Dynamic**, **Online**, and **Healthy** as illustrated in Figure 3-34.

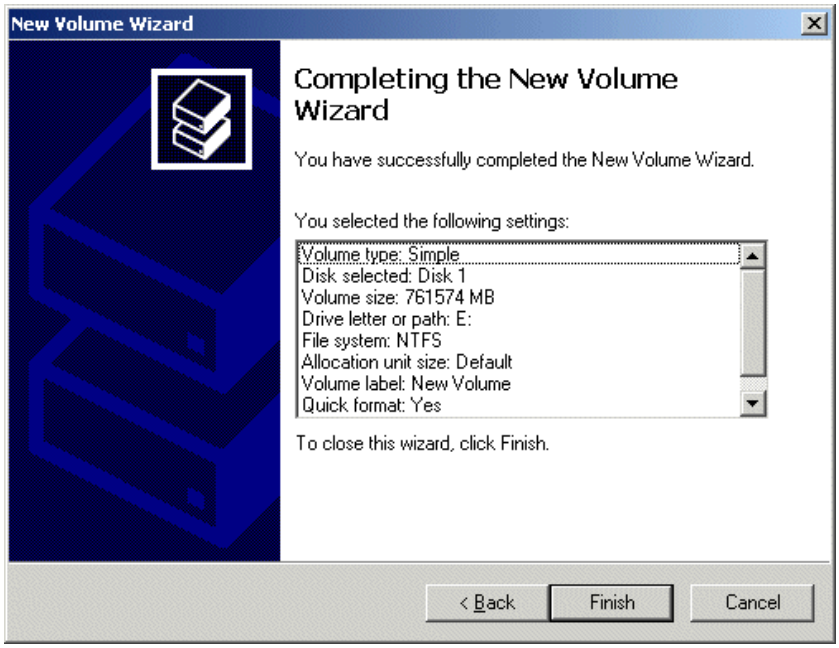


Figure 3-33. The Completing the Wizard dialog

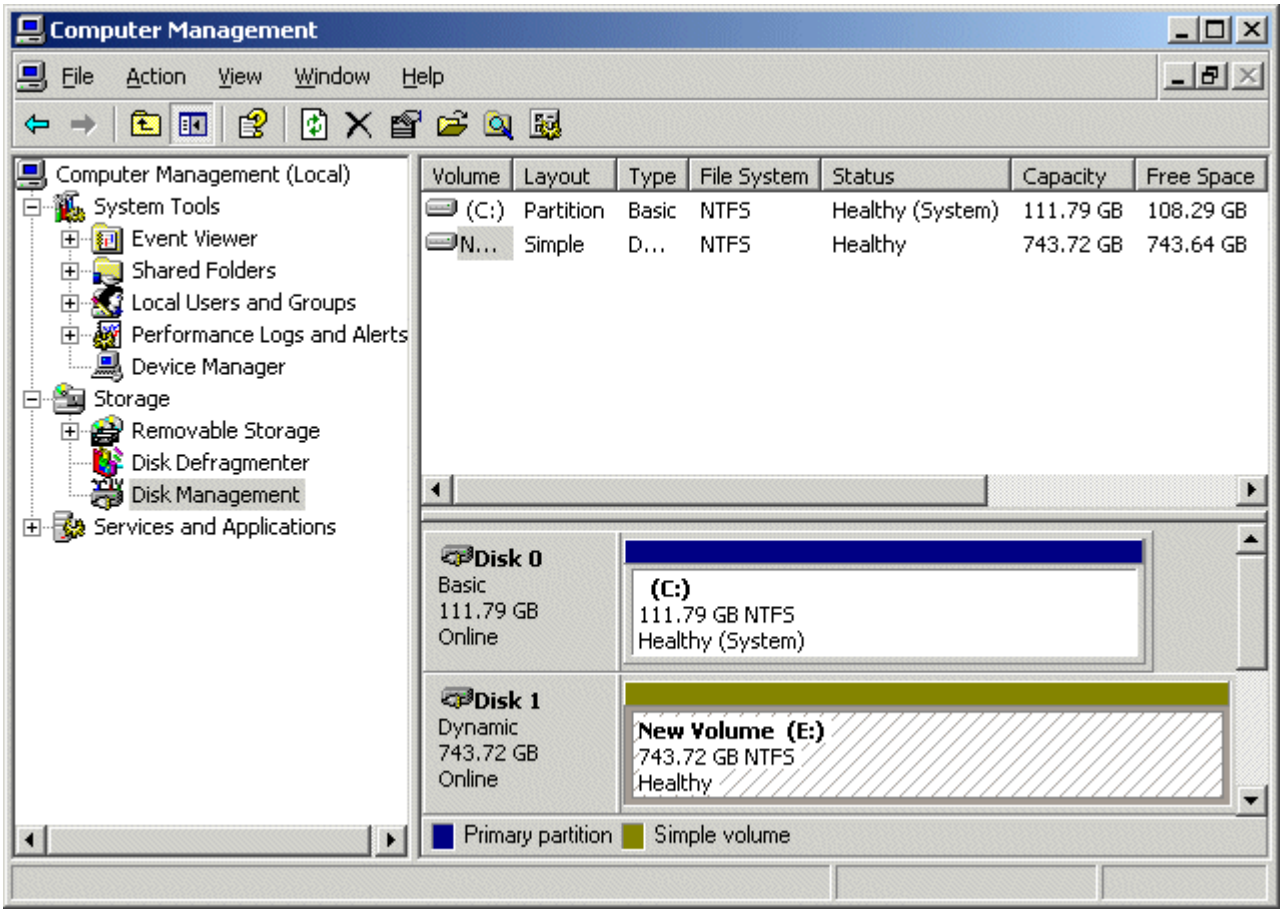


Figure 3-34. Disk 1 is now shown as being Dynamic, Online, and Healthy

Rebuilding an Existing (Failed) 3ware RAID 5 Array

The discussions in this section assume that you originally have a good, working RAID 5 array. In this case, if you double-click the **Connect to 3DM 2** icon on your desktop and login to the ensuing webpage using the default password (which is **3ware**), you will see that the status of your array looks something like that shown in Figure 3-35.

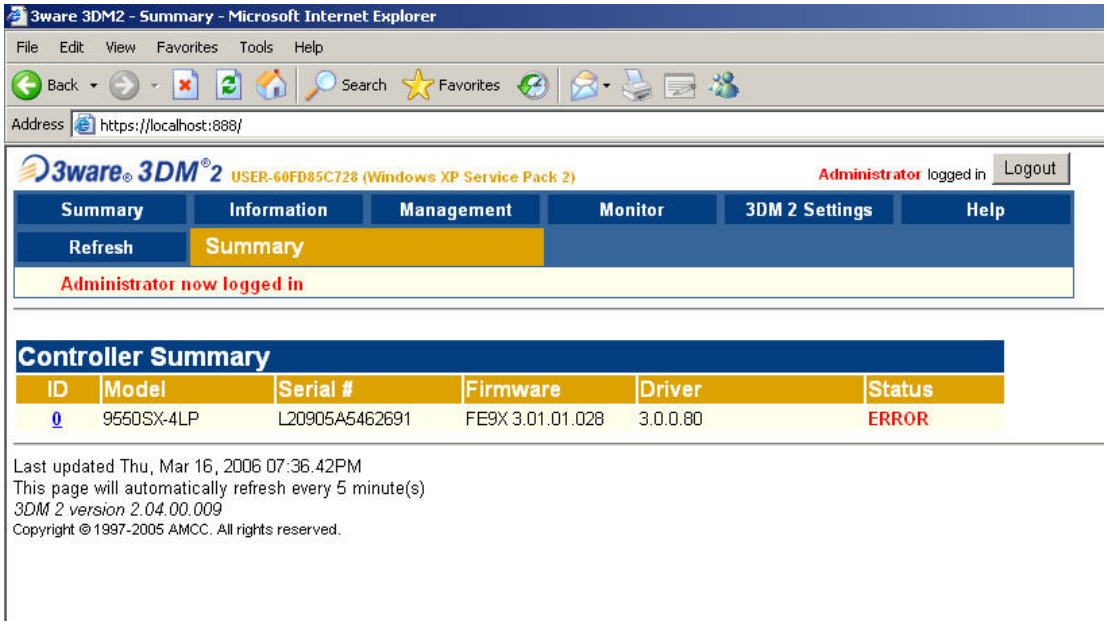

3ware 3DM2 - Summary - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address https://localhost:888/
3ware 3DM 2 USER-60FD85C728 (Windows XP Service Pack 2)
Administrator logged in Logout
Summary Information Management Monitor 3DM 2 Settings Help
Refresh Summary
Administrator now logged in
Controller Summary
ID Model Serial # Firmware Driver Status
0 9550SX-4LP L20905A5462691 FE9X 3.01.01.028 3.0.0.80 ERROR
Last updated Thu, Mar 16, 2006 07:36.42PM
This page will automatically refresh every 5 minute(s)
3DM 2 version 2.04.00.009
Copyright © 1997-2005 AMCC. All rights reserved.

Figure 3-35

Once you have observed this good array, exit out of the 3DM 2 web interface. At some stage, one of the disks in the array may start to degrade or go completely off-line. For the purposes of these discussions, we are going to power down the system, physically remove Disk 01 from the array (thereby simulating a catastrophic failure on this disk) and power up the system back up again.

1) Power down the system and remove the center data disk (Disk 01) as shown in Figure 3-36.

Figure 3-36

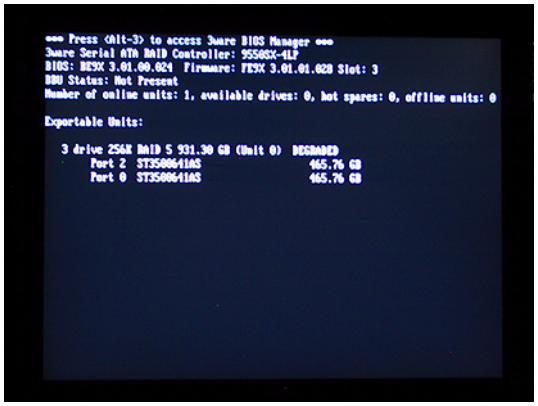

Press <Alt-3> to access 3ware BIOS Manager
3ware Serial ATA RAID Controller: 9550SX-4LP
BIOS: BE9X 3.01.00.024 Firmware: FE9X 3.01.01.028 Slot: 3
BBU Status: Not Present
Number of online units: 1, available drives: 0, hot spares: 0, offline units: 0
Exportable Units:
3 drive 256K RAID 5 931.30 GB (Unit 0) DEGRADED
Port 2 ST3500641AS 465.76 GB
Port 0 ST3500641AS 465.76 GB

Figure 3-37

2) Power the system back up again. The BIOS detects the fact that there is a problem with the RAID array and displays an appropriate message (Figure 3-37). Press the <Pause Break> key to freeze the display; from this (and Figure 3-8) you will be able to determine which drive has failed.

3) Press and hold the soft power key in order to power the system down.

4) Remove the failed drive and replace it with a good drive of the same type and capacity (remember that we only removed the drive above in order to simulate a catastrophic failure scenario).

5) Power the system up again all the way into windows.

6) Double-click the **Connect to 3DM 2** icon on your desktop and login to the ensuing webpage using your administrator password (note that you may need to contact your IT department in order to obtain this password).

7) After you have logged in as the administrator, you will see a status of ERROR in the 3DM 2 interface (Figure 3-38).

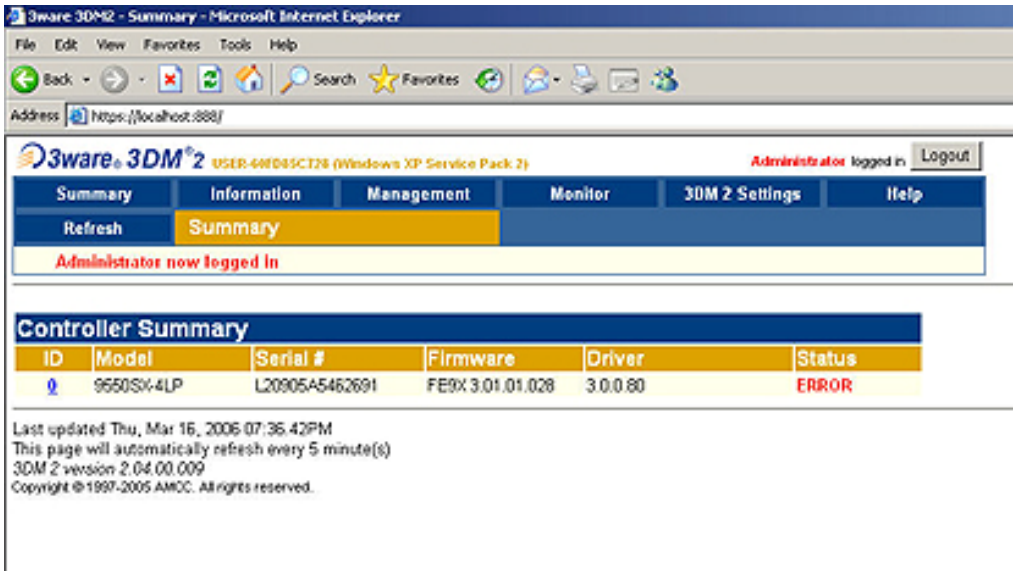


Figure 3-38.

8) Observe that the system reports the two good drives as being in a DEGRADED unit as shown in Figure 3-39.

9) Depending on the past history of the disk (whether or not it was previously part of a 3ware RAID array) the system may report that the new disk is INOPERABLE as illustrated in Figure 3-39. Alternatively, the system may report the new disk as being AVAILABLE as illustrated in Figure 3-40.

   Assuming that the new disk is reported as being INOPERABLE, click the checkbox associated with that unit (**Unit 1** in this example) and then click the **Delete Unit** button. Observe that the system will present you with a confirmation dialog as shown in Figure 3-39. Click the OK button, and observe that the new disk is now reported as being AVAILABLE as illustrated in Figure 3-40.

10) Click the checkbox associated with the two good drives (shown as **Unit 0** in this example) and also click the checkbox associated the new replacement drive (shown as **Port 1** in this example) and then click the **Rebuild Unit** button associated with the two good drives as illustrated in Figure 3-41.

11) Observe the ensuing pop-up dialog box as shown in Figure 3-42. Click the checkbox associated with the new drive, and then click the **OK** button.

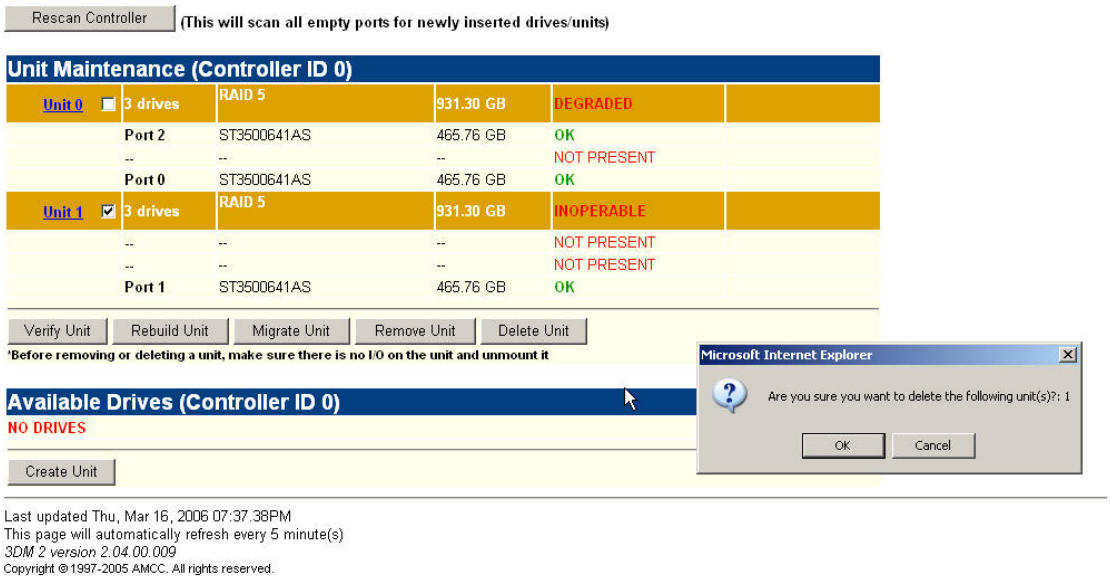


Figure 3-39.

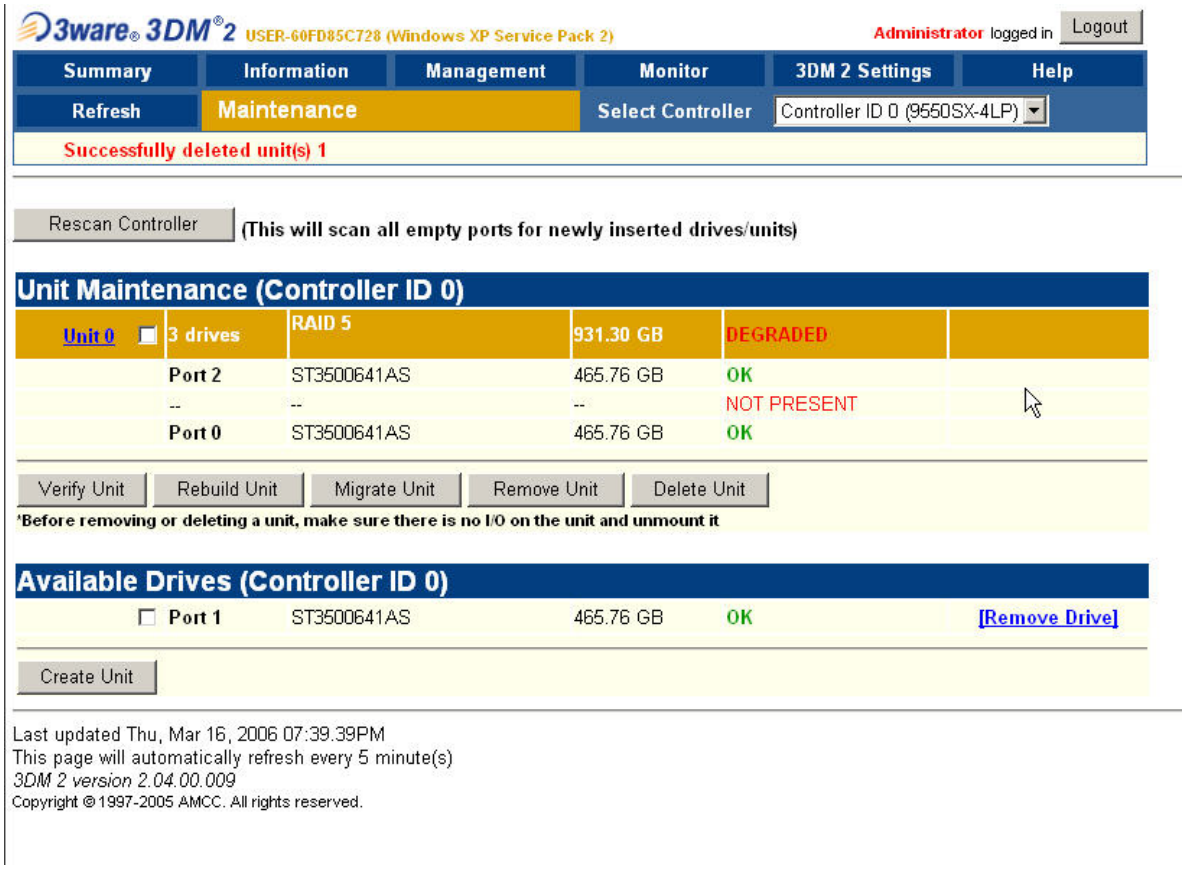


Figure 3-40.

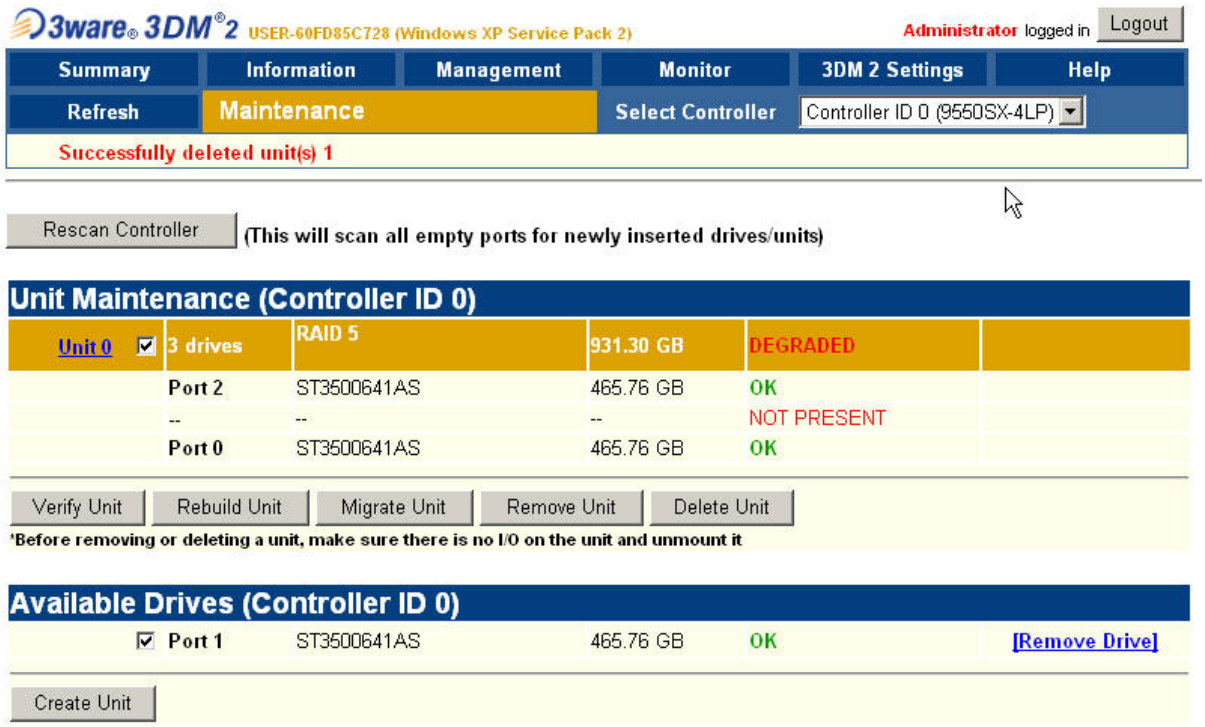


Figure 3-41.

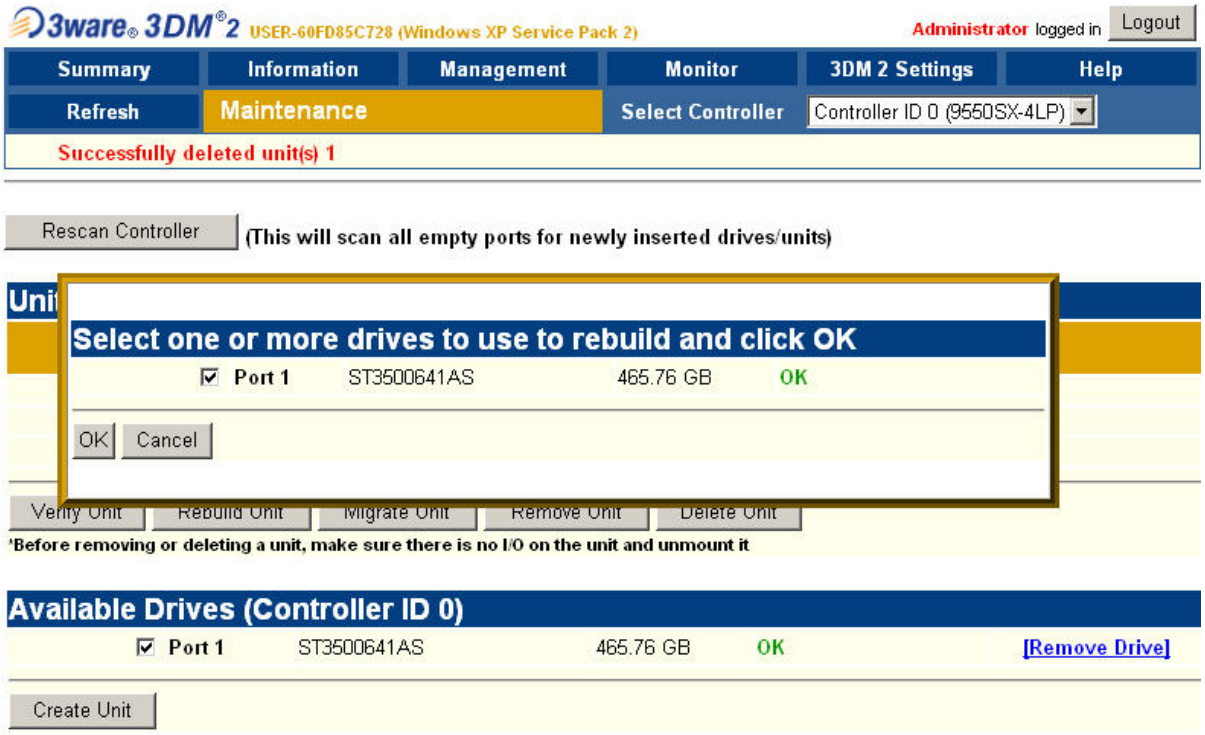


Figure 3-42.

12) Observe that the replacement drive has now been incorporated into the RAID 5 array as illustrated in Figure 3-43 (note that this array is still shown as being DEGRADED).

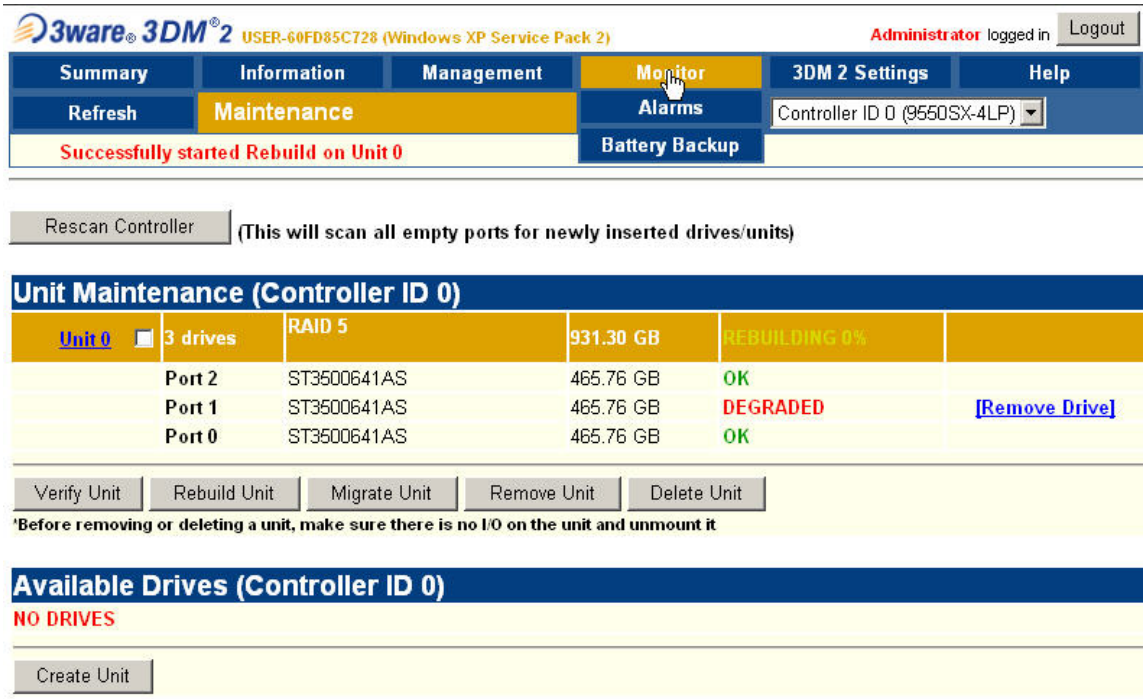


Figure 3-43.

When the new disk has been fully integrated into the array, the interface will reflect the completion of the rebuild.

Note: This rebuild process can take a significant amount of time (14 hours in the case of our example using 400 GB disks).

Note: The rebuild process is performed in the background, so you can continue to use your system while the rebuild is taking place.

Configuring the RAID Array
(with Hot Spare and System Partition on RAID Array)

Note: Your MaxPac8230 may be configured for connection to the optional TeraPac3 8 drive SATA Expansion. In this case the MaxPac8230 will include a 12 or 16 port SATA RAID 5 controller. This chapter illustrates and assumes a 4 port SATA RAID 5 controller so the photos may be somewhat different. Refer to Chapter 7 for a brief section on the MaxPac8230 connection to the TeraPac3 and to the TeraPac3 User Operation and Maintenance Guide for more details.

Note that these discussions reflect system configurations that have the system partition established on the RAID array itself (leaving a hot-spare drive) as illustrated in Figure 3-44. Configurations with a separate system drive are discussed earlier in this chapter.

When you take possession of your MaxPac 8230 system, the RAID system will already have been established, initialized, and verified. The instructions in this section are intended to address those rare

situations where you need to replace a degraded/failed drive or you wish to rebuild the RAID system from the ground up.

Your MaxPac system can contain up to four SATA hot-swappable hard disk drives presented in a 4-drive disk caddy. This caddy is located on the lower left-hand side of the main chassis under the "Baghdad Filter" assembly as shown to the left of Figure 3-44 (the numbering of the disks is as shown to the right of Figure 3-44). The main array – including the system partition – occupies disks 00, 01, and 02, leaving disk 03 as the hot-spare (note that this is the initial/default configuration; once the hot-spare disk has been deployed as discussed below, the failed-and-replaced disk will assume the role of the new hot-spare).

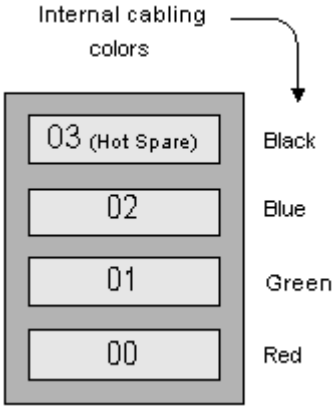


Figure 3-44

Establishing the Array and Reloading the System Image

These discussions assume that you are reestablishing a system from the ground up, and that you have four new disks in your disk caddy.

1) Start to power-up the system. When you see the BIOS message *"<Alt-3> to access 3ware BIOS Manager"* (Figure 3-45) press and hold the <ALT> (alternate) key and – while still holding this key – press the number "3" key. This will invoke the 3ware BIOS manager; in most cases, you will be presented with a warning screen as shown in Figure 3-46.

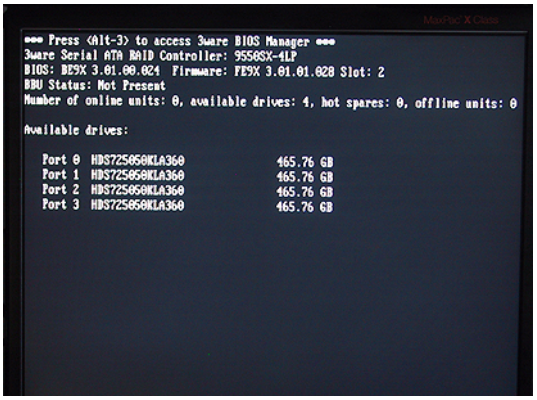

MaxPac X Class
*** Press <Alt-3> to access 3ware BIOS Manager ***
3ware Serial ATA RAID Controller: 9550SX-4LP
BIOS: BE9X 3.01.00.024 Firmware: FE9X 3.01.01.028 Slot: 2
BBU Status: Not Present
Number of online units: 0, available drives: 4, hot spares: 0, offline units: 0
Available drives:
Port 0 HDS725050KLA360 465.76 GB
Port 1 HDS725050KLA360 465.76 GB
Port 2 HDS725050KLA360 465.76 GB
Port 3 HDS725050KLA360 465.76 GB

Figure 3-45

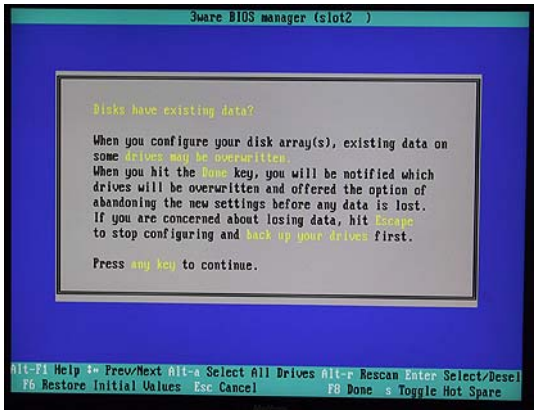

3ware BIOS manager (slot2)
Disks have existing data?
When you configure your disk array(s), existing data on some drives may be overwritten.
When you hit the Done key, you will be notified which drives will be overwritten and offered the option of abandoning the new settings before any data is lost.
If you are concerned about losing data, hit Escape to stop configuring and back up your drives first.
Press any key to continue.
Alt-F1 Help Prev/Next Alt-a Select All Drives Alt-r Rescan Enter Select/Desel
F6 Restore Initial Values Esc Cancel F8 Done : Toggle Hot Spare

Figure 3-46

2) Press any key to continue, which will take you fully into the **3ware BIOS Manager**. Observe that the four disks are shown on the screen, but no drives are initially selected (Figure 3-47).

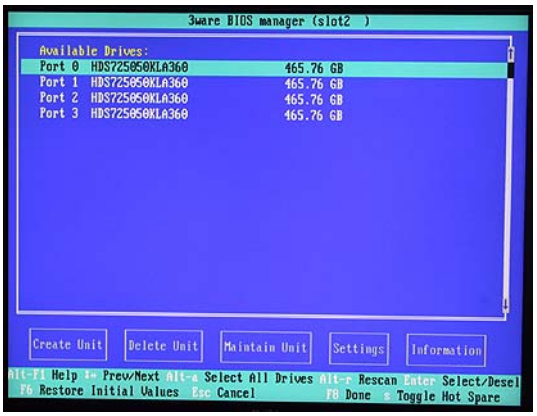

3ware BIOS manager (slot2)
Available Drives:
Port 0 HDS725050KLA360 465.76 GB
Port 1 HDS725050KLA360 465.76 GB
Port 2 HDS725050KLA360 465.76 GB
Port 3 HDS725050KLA360 465.76 GB
Create Unit
Delete Unit
Maintain Unit
Settings
Information
Alt-F1 Help ↕ Prev/Next Alt-a Select All Drives Alt-r Rescan Enter Select/Desel
F6 Restore Initial Values Esc Cancel F8 Done s Toggle Hot Spare

Figure 3-47

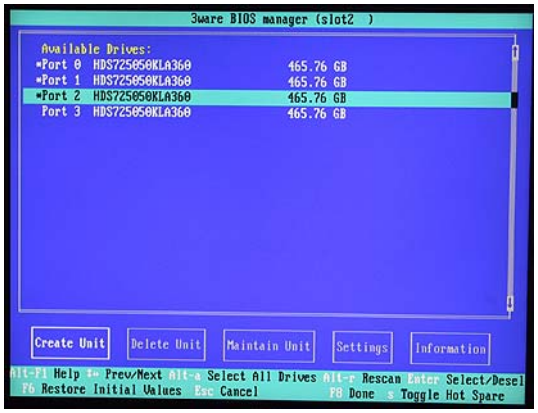

3ware BIOS manager (slot2)
Available Drives:
*Port 0 HDS725050KLA360 465.76 GB
*Port 1 HDS725050KLA360 465.76 GB
*Port 2 HDS725050KLA360 465.76 GB
Port 3 HDS725050KLA360 465.76 GB
Create Unit
Delete Unit
Maintain Unit
Settings
Information
Alt-F1 Help ↕ Prev/Next Alt-a Select All Drives Alt-r Rescan Enter Select/Desel
F6 Restore Initial Values Esc Cancel F8 Done s Toggle Hot Spare

Figure 3-48

3) Use the up/down arrow keys to highlight disks 00, 01, and 02 in turn; as each disk is highlighted, press the <Enter> key to select it (selected disks are indicated with an asterisk '*' character as shown in Figure 3-48). (Note that the reason disk 03 is not selected is that this is being reserved as the hot-spare.)

4) Use the <Tab> key to highlight the **Create Unit** option (Figure 3-48), then press the <Enter> key to key to invoke the Create Disk Array screen.

5) Use the up/down arrow keys to highlight the **RAID Configuration** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-49).

6) Now use the up/down keys to highlight the **RAID 5** option and then press the <Enter> key to select this option.

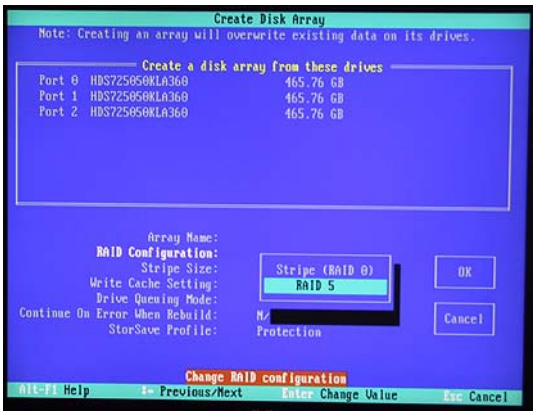


Figure 3-49

Figure 3-50

7) Next, use the up/down arrow keys to highlight the **Stripe Size** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-50).

8) Use the up/down arrow keys to highlight the **256 KB** option, and then press the <Enter> key to select this option.

9) Use the up/down arrow keys to highlight the **Write Cache Setting** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-51).

10) Use the up/down arrow keys to highlight the **Enabled** option, and then press the <Enter> key to select this option.

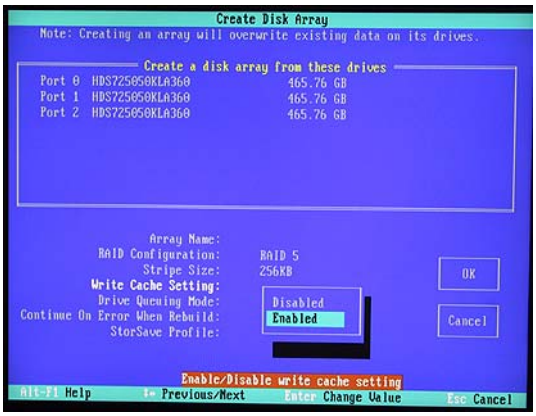


Figure 3-51

Figure 3-52

11) Use the up/down arrow keys to highlight the **StorSave Profile** item, and then press the <Enter> key to access an associated pop-up dialog (Figure 3-52).

12) Use the up/down arrow keys to highlight the **Protection** option, and then press the <Enter> key to select this option.

13) Use the up/down/right/left arrow keys to highlight the **OK** item (Figure 3-53) and then press the <Enter> key to save your changes.

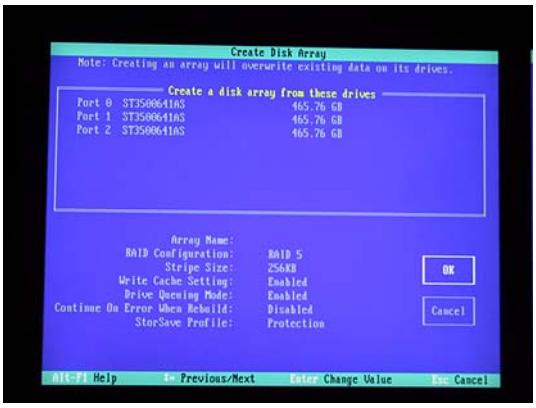


Figure 3-53

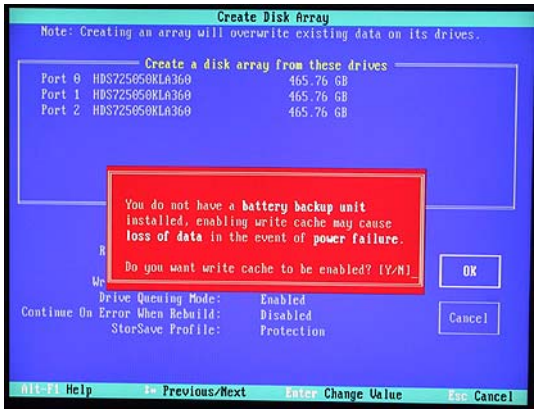

Create Disk Array
Note: Creating an array will overwrite existing data on its drives.
Create a disk array from these drives
Port 0 HDS725050KLA360 465.76 GB
Port 1 HDS725050KLA360 465.76 GB
Port 2 HDS725050KLA360 465.76 GB
You do not have a battery backup unit installed, enabling write cache may cause loss of data in the event of power failure.
Do you want write cache to be enabled? [Y/N]
Drive Queuing Mode: Enabled
Continue On Error When Rebuild: Disabled
StorSave Profile: Protection
OK
Cancel
Alt-F1 Help
Previous/Next
Enter Change Value
Esc Cancel

Figure 3-54

14) You will be presented with a warning dialog as shown in Figure 3-54. Press the **Y** (yes) key to allow the write cache to be enabled [note that this mode significantly improves performance, but it can result in a loss of data in the event of a power failure, so MaxVision STRONGLY recommends the use of an uninterruptible power supply (UPS) with your system.

15) At this point, you will be presented with a summary description of the RAID array you have defined (Figure 3-55).

16) Observe that this screen shows the array (3 drives) and the remaining uncommitted drive. Use the up/down arrow keys to highlight the uncommitted drive and press the <Enter> key to select it (the fact this has been selected will be indicated with an asterisk '*' character).

17) Now press the 'S' key to designate this selected drive as being the hot-spare (an annotation will appear next to the drive confirming this status).

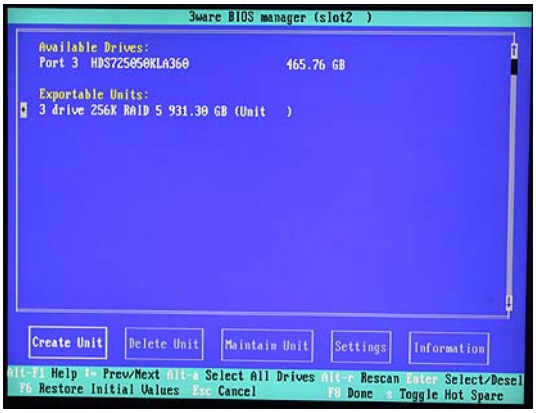


Figure 3-55

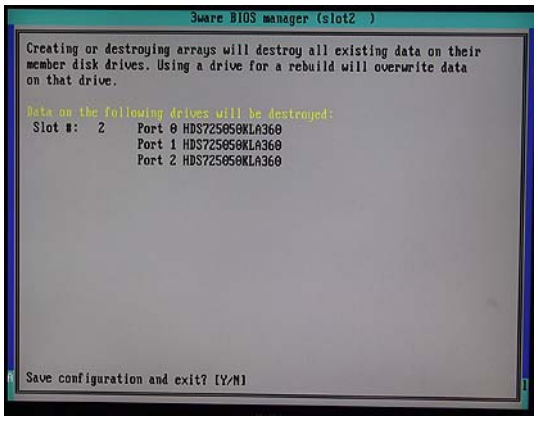

3ware BIOS manager (slot2)
Creating or destroying arrays will destroy all existing data on their member disk drives. Using a drive for a rebuild will overwrite data on that drive.
Data on the following drives will be destroyed:
Slot #: 2
Port 0 HDS725050KLA360
Port 1 HDS725050KLA360
Port 2 HDS725050KLA360
Save configuration and exit? [Y/N]

Figure 3-56

18) Press the <F8> key to request that your array be committed and to exit the 3ware BIOS setup utility.

19) You will be presented with a warning screen as shown in Figure 3-56. Before you do anything else, ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive. In the case of a multiple DVD image, ensure Disk #1 is in the drive. Then press the **Y** (yes) key in order to establish your array, exit the 3ware BIOS setup utility, and automatically reboot the machine.

Note: If you are using an image CD/DVD you've created yourself as discussed in *Appendix A*, and if that CD/DVD (or the first CD/DVD in a set) has the Acronis *Bootable Rescue Media* software on it, then simply insert this disk in the drive and proceed to point 20 below.

Alternatively, if your CD/DVD does not have the Acronis *Bootable Rescue Media* software on it, then first insert the bootable recovery DVD supplied by MaxVision in the drive and reboot as discussed in point 20 below. However, before proceeding to point 21, remove the bootable recovery DVD supplied by MaxVision from the drive and replace it with the first disk from your own image.

20) The system will automatically reboot itself from the recovery disk in the DVD drive. Following the Acronis splash, you will be presented with the **Pick a Task** page in the Acronis True Image application (Figure 3-57).

Figure 3-57

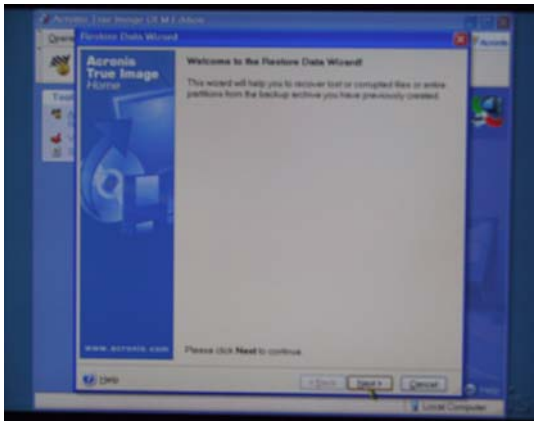


Figure 3-58

21) Click the **Recovery** item to be presented with the first page from the **Restore Data Wizard** (Figure 3-58).

22) Click the **Next** button to be presented with the **Archive Selection** screen (Figure 3-59).

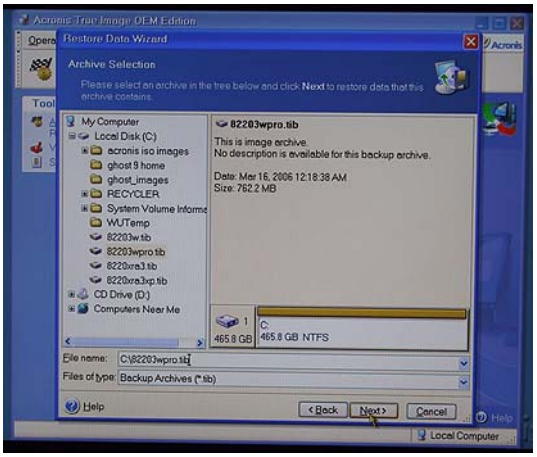


Figure 3-59

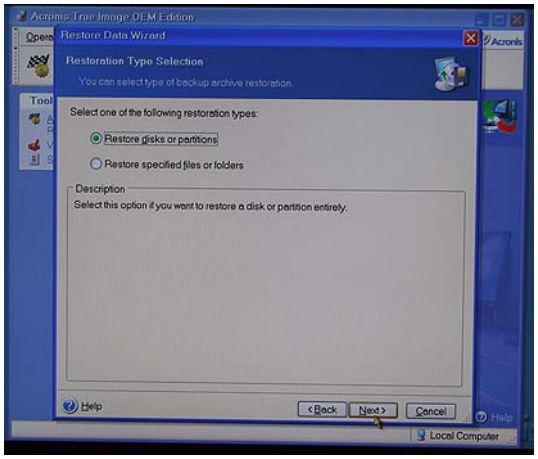

Acronis True Image OEM Edition
Restore Data Wizard
Restoration Type Selection
You can select type of backup archive restoration.
Select one of the following restoration types:
Restore disks or partitions
Restore specified files or folders
Description
Select this option if you want to restore a disk or partition entirely.
Help
< Back
Next >
Cancel
Local Computer

Figure 3-60

23) Ensure that the **CD Drive** item in the left-hand selection pane is expanded (if not, click the '+' icon next to this item) and then use the mouse to click on the image (*.tib) file you will see there (Figure 3-59).

Note: In the case of a multi-CD/DVD image set, the system will present you with a message saying that this is not the last created volume in the archive and requesting you to insert the last created volume. In this case, replace the current CD/DVD with the last disk from the set, click on the *.tib file on this disk, and proceed to point 24 (at some stage you will be prompted to return to the first disk).

24) Click the **Next** button to be presented with the **Restoration Type Selection** page (Figure 3-60).

25) Select the **Restore Disks or Partition** item and then click the **Next** button to be presented with the **Partition or Disk to Restore** page (Figure 3-61).

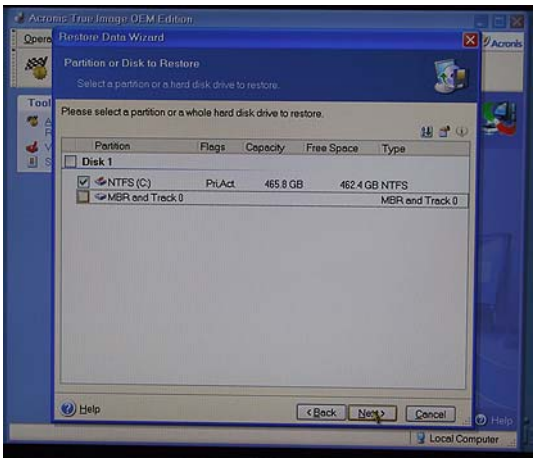


Figure 3-61

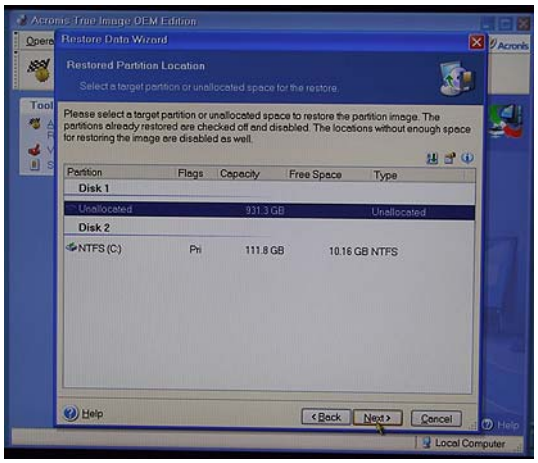


Figure 3-62

26) Select the **NTFS (C)** option (a tick-mark indicates that the option has been selected) and then click the NEXT button to be presented with the **Restored Partition Location** page (Figure 3-62).

27) Select the **Unallocated** (Disk 1) item and then click the **Next** button to be presented with the **Restored Partition Type** page (Figure 3-63).

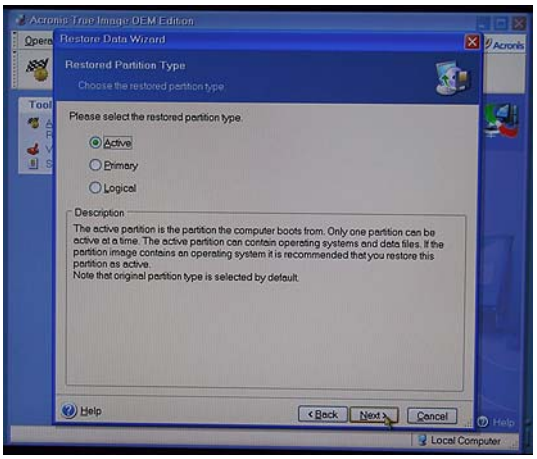

Acronis True Image OEM Edition
Restore Data Wizard
Restored Partition Type
Choose the restored partition type
Please select the restored partition type.
Active
Primary
Logical
Description
The active partition is the partition the computer boots from. Only one partition can be active at a time. The active partition can contain operating systems and data files. If the partition image contains an operating system it is recommended that you restore this partition as active.
Note that original partition type is selected by default.
Help
< Back
Next >
Cancel
Local Computer

Figure 3-63

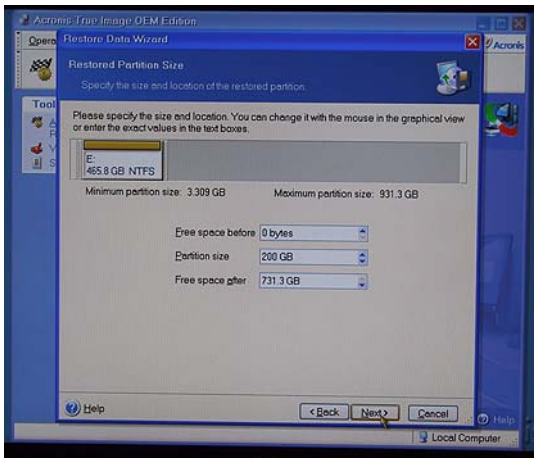

Acronis True Image OEM Edition
Restore Data Wizard
Restored Partition Size
Specify the size and location of the restored partition.
Please specify the size and location. You can change it with the mouse in the graphical view or enter the exact values in the text boxes.
E:
465.8 GB NTFS
Minimum partition size: 3.309 GB
Maximum partition size: 931.3 GB
Free space before 0 bytes
Partition size 200 GB
Free space after 731.3 GB
Help
< Back
Next >
Cancel
Local Computer

Figure 3-64

28) Select the **Active** item and then click the **Next** button to be presented with the **Restored Partition Size** page (Figure 3-64).

29) We have chosen to establish a 200 GB system partition in this example; the remaining "Free Space" will automatically be allocated to the data portion of the RAID 5 array. Click the **Next** button to be presented with the **Next Selection** window (Figure 3-65)

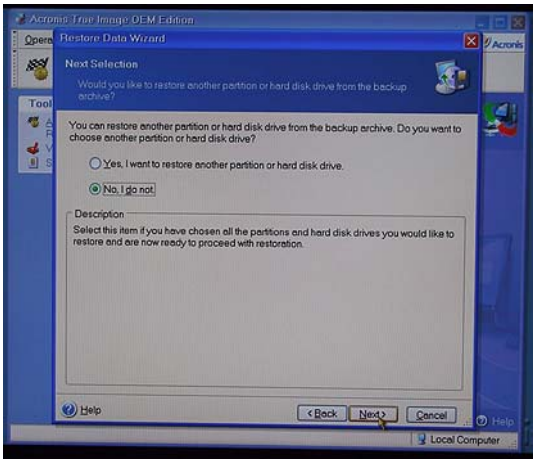

Acronis True Image OEM Edition
Restore Data Wizard
Next Selection
Would you like to restore another partition or hard disk drive from the backup archive?
You can restore another partition or hard disk drive from the backup archive. Do you want to choose another partition or hard disk drive?
Yes, I want to restore another partition or hard disk drive.
No, I do not.
Description
Select this item if you have chosen all the partitions and hard disk drives you would like to restore and are now ready to proceed with restoration.
Help
< Back
Next >
Cancel
Local Computer

Figure 3-65

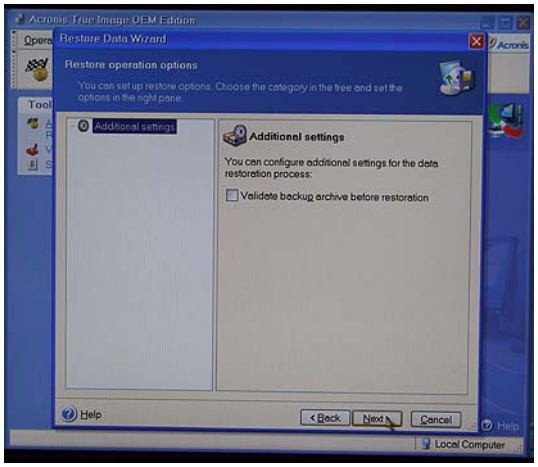

Acronis True Image OEM Edition
Restore Data Wizard
Restore operation options
You can set up restore options. Choose the category in the tree and set the options in the right pane.
Additional settings
Additional settings
You can configure additional settings for the data restoration process:
Validate backup archive before restoration
Help
< Back
Next >
Cancel
Local Computer

Figure 3-66

30) Select the **No, I Do Not** option and then click the **Next** button to be presented with the Restore Operation options page (Figure 3-66).

31) Simply click the **Next** button to be presented with the **Restore Data Wizard** summary screen (Figure 3-67)

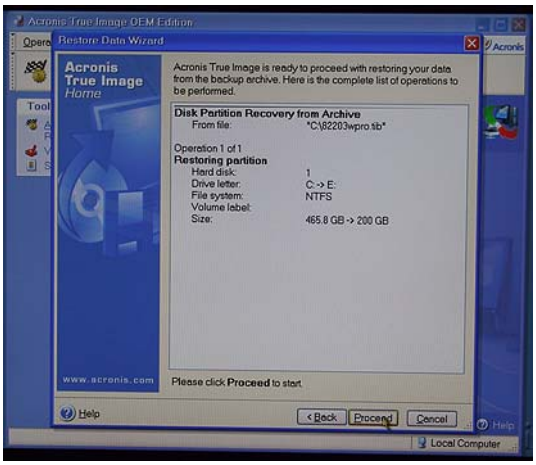

Acronis True Image OEM Edition
Restore Data Wizard
Acronis True Image Home
Acronis True Image is ready to proceed with restoring your data from the backup archive. Here is the complete list of operations to be performed.
Disk Partition Recovery from Archive
From file: "C:\82203wpro.tib"
Operation 1 of 1
Restoring partition
Hard disk: 1
Drive letter: C -> E:
File system: NTFS
Volume label:
Size: 465.8 GB -> 200 GB
www.acronis.com
Please click Proceed to start.
Help
< Back
Proceed
Cancel
Local Computer

Figure 3-67

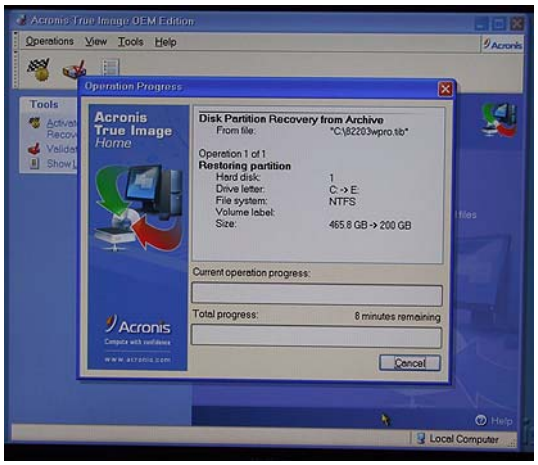


Figure 3-68

32) Click the **Proceed** button to initiate the restoration, at which time you will be presented with the **Operation Progress** dialog (Figure 3-68), which will reflect the status of the restoration. (In the case of a multi-DVD image, the system will inform you as and when to insert subsequent DVDs).

33) Once the restoration process has been completed, eject the DVD from the CD/DVD drive, power-down the system by holding the Soft-Power button on top of the center display for approximately five seconds, and then power-up the machine using the Soft Power button to boot-up into Windows.

Note: Once you have re-loaded the original MaxVision-supplied image, you will also have to re-run the initialization procedures – including re-activating/re-registering your OS license – as described earlier in this manual.

34) After the system has booted up into Windows (and you've re-run the initialization procedures as noted above), right-click on the **My Computer** icon and then select the **Manage** option. In the ensuing **Computer Management** dialog, click on the **Disk Management** item (Figure 3-69).

35) Right-mouse-click in the **Unallocated** area and select the **New Partition** item in order to be presented with the **New Partition** Wizard as shown in Figure 3-70.

36) Click the **Next** button, then select the **Perform a Quick Format** option (ensure the File System type is set to **NTFS**), and then click the **OK** button. The **Computer Management** window will reflect your newly formatted partition (Figure 3-71).

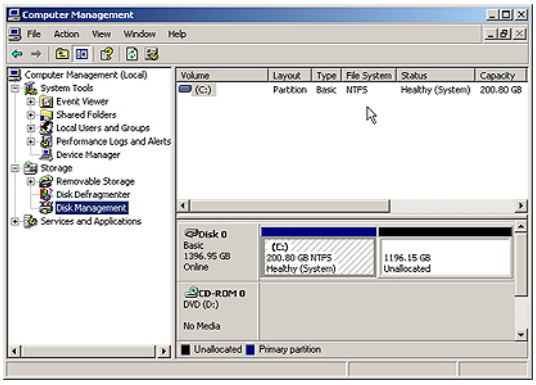


Figure 3-69

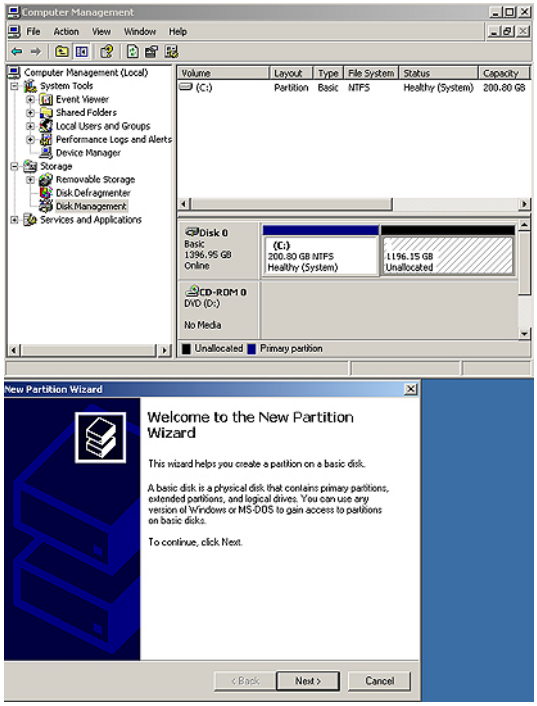


Figure 3-70

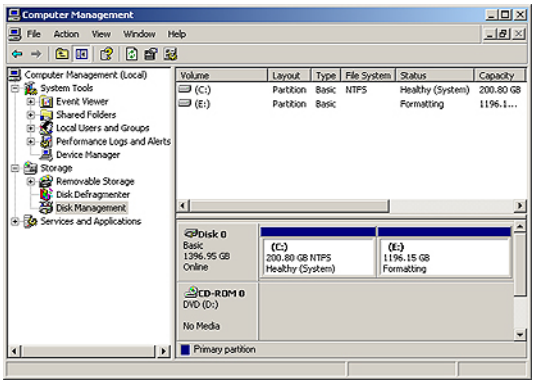


Figure 3-71

Rebuilding an Existing (Failed) 3ware RAID 5 Array

The discussions in this section assume that you originally have a good, working RAID 5 array (consisting of 3 drives for the array and 1 Hot Spare). In this case, if you double-click the **Connect to 3DM 2** icon on your desktop and login to the ensuing webpage using the default password (which is **3ware**), you will see that the status of your array looks something like that shown in Figure 3-72.

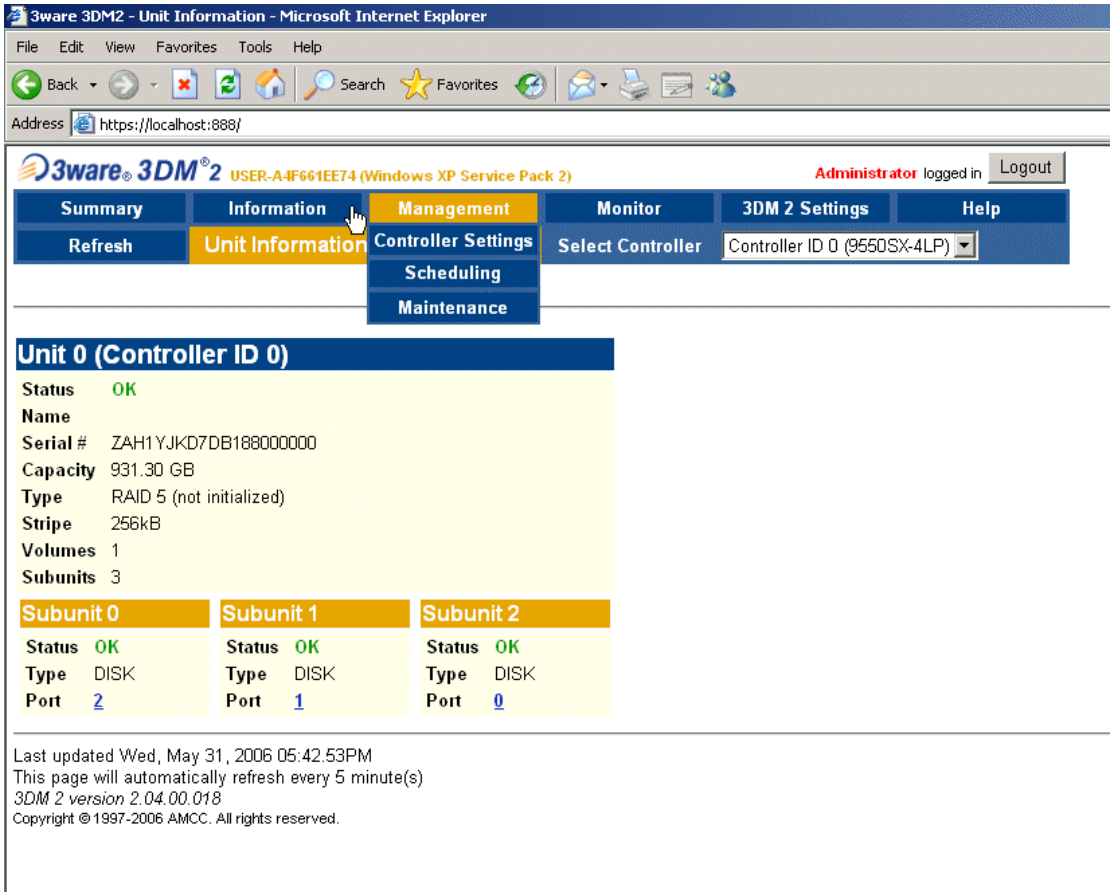


Figure 3-72

Once you have observed this good array, exit out of the 3DM 2 web interface. At some stage, one of the disks in the array may start to degrade or go completely off-line. For the purposes of these discussions, we are going to power down the system, physically remove Disk 01 from the array (thereby simulating a catastrophic failure on this disk) and power up the system back up again.

1) Power down the system and remove the center data disk (Disk 01) as shown in Figure 3-73.

2) Power the system back up again. The BIOS detects the fact that there is a problem with the RAID array and displays an appropriate message (Figure 3-74). Press the <Pause Break> key to freeze the display; from this (and Figure 3-44) you will be able to determine which drive has failed. (In the case of our example, the RAID array is shown as being "Degraded" and only Ports 0 and 2 are shown as being available.)

3) Press the <Pause Break> key again to un-freeze the display. The system will automatically bring the hot-spare drive online and integrate it into the array.

4) As soon as possible after the array has been reconstructed as discussed in point 3, power down the system, remove the failed drive (in this case it was previously removed to simulate the failure), and replace it with a good drive of the same type and capacity.

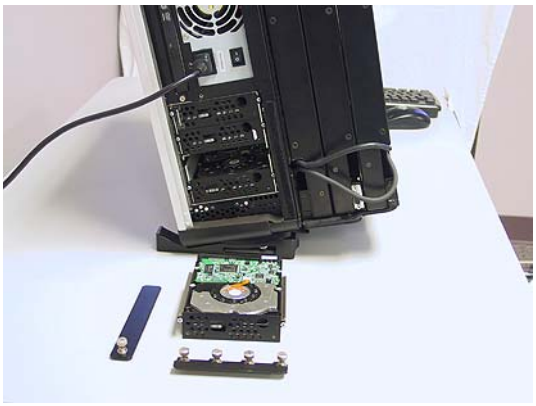


Figure 3-73

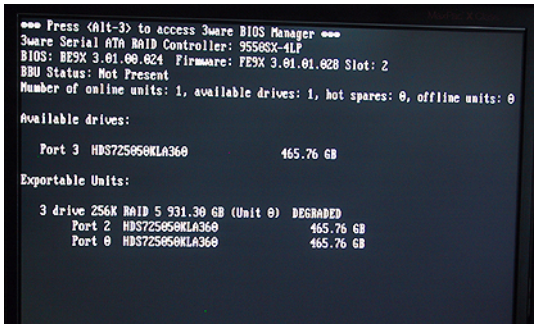

••• Press <Alt-3> to access 3ware BIOS Manager •••
3ware Serial ATA RAID Controller: 9550SX-4LP
BIOS: BE9X 3.01.00.024 Firmware: FE9X 3.01.01.028 Slot: 2
BBU Status: Not Present
Number of online units: 1, available drives: 1, hot spares: 0, offline units: 0
Available drives:
Port 3 HDS725050KLA360 465.76 GB
Exportable Units:
3 drive 256K RAID 5 931.30 GB (Unit 0) DEGRADED
Port 2 HDS725050KLA360 465.76 GB
Port 0 HDS725050KLA360 465.76 GB

Figure 3-74

5) Start to power-up the system. When you see the BIOS message *"<Alt-3> to access 3ware BIOS Manager"*, press and hold the <ALT> (alternate) key and – while still holding this key – press the number "3" key. This will invoke the 3ware BIOS manager; in most cases, you will be presented with a warning screen; press any key to continue, which will take you fully into the 3ware BIOS Manager.

6) Observe that this screen shows the array (3 drives) and the remaining uncommitted drive (the new drive you've just added to the system). Use the up/down arrow keys to highlight the uncommitted drive and press the <Enter> key to select it (the fact this has been selected will be indicated with an asterisk '*' character).

Note: If this drive was ever part of a previous 3ware RAID array, it will show up as a "Failed Array" comprising only a single drive. In this case, use the <Tab> key to select the **Delete Unit** option and then press the <Enter> key to select this option and delete the drive as an array.

7) Now press the 'S' key to designate this selected drive as being the new hot-spare (an annotation will appear next to the drive confirming this status).

8) Press the <F8> key to exit the 3ware BIOS utility and automatically reboot the system.

9) Power the system up all the way into Windows.

Chapter 4: Module Replacement and Upgrade Procedures for Single-Screen Systems

Introduction

The instructions in this chapter describe how to replace and upgrade various modules in your MaxPac unit.

Note: Generally speaking, you should only access the MaxPac internals under the direction of MaxVision support. In some cases, performing unauthorized procedures or using components that have not been tested and approved by MaxVision may invalidate your warranty.

Note: Power-down your MaxPac system (shut down Windows® and then turn the hard power switch to its Off position) and then remove the power cable before performing any of the procedures discussed in this chapter. Also please be aware of static discharge when working on your MaxPac. In General, touch the metal part of the chassis to discharge any static prior to handling any delicate electronic parts.

Note: When accessing the system internals and/or performing module upgrade procedures, you are quickly going to end up with a lot of screws and other small items. In order to keep track of things and to prevent misplacing any parts, it is strongly recommended to have a plastic container divided into small compartments and to label these compartments as you work.

Required Tools and Techniques

Most of the module replacement and upgrade procedures discussed in this chapter can be performed using only a pair of #1 (small tip) and #2 (regular tip) Phillips screwdrivers. However, some procedures will require additional tools as discussed in *Appendix C*.

Note: It is extremely important that you use only high-quality tools so as to avoid any slippage and stripping of screw heads and threads. Furthermore, in order to avoid any slippage, it is VERY important to apply adequate force in the form of **firm and steady pressure**. See *Appendix C* for details on the tools required to service the system.

Note: It is highly recommended that you use magnetized screwdrivers so as to prevent screws from dropping inside the case and/or aiding in retrieving them if they do drop inside the case. (If your screwdriver isn't already magnetized, you can make it so by repeatedly "stroking" the blade with a permanent magnet.

Names and Types of Screws

MaxPac X-Class systems use a variety of different screw types. In order to help you follow the instructions in this chapter, details on these screws are provided in *Appendix C*.

Flat Panel Display Module

1) Lay the system flat on the table with the display facing upwards (it is recommended that you lay the system on bubble wrap in order to protect the finish).
2) Use a Phillips #1 screwdriver to remove the four 4-40 3/16" black countersunk screws – two on each side – holding the monitor bezel to the main chassis (Figures 4-1 and 4-2).

Figure 4-1

Figure 4-2

3) Use a Phillips #2 screwdriver to remove the four silver screws – two on the top and two on the bottom holding the main chassis to the monitor bezel (Figures 4-3 and 4-4).

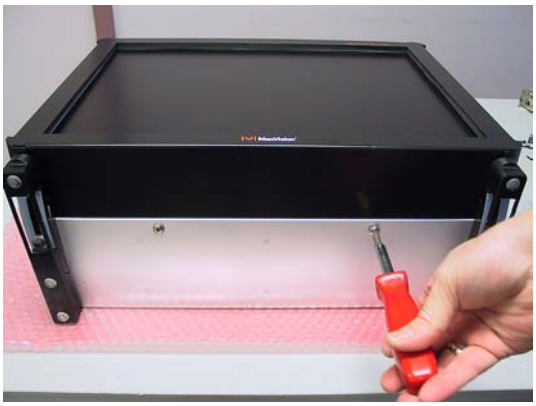


Figure 4-3

Figure 4-4

4) Gently lift the monitor bezel away from the main chassis. Observe the soft power cable as illustrated in Figure 4-5.

Figure 4-5

5) Disconnect the soft power cable as illustrated in Figures 4-6 and 4-7.

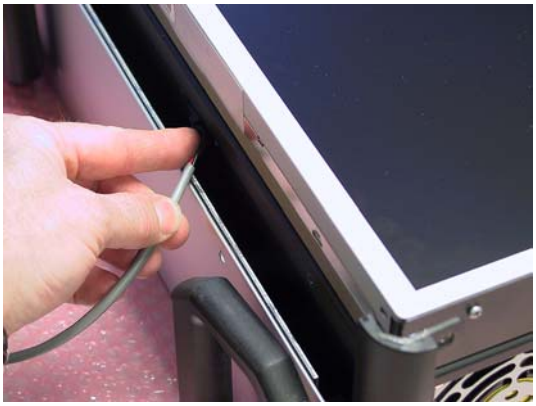


Figure 4-6

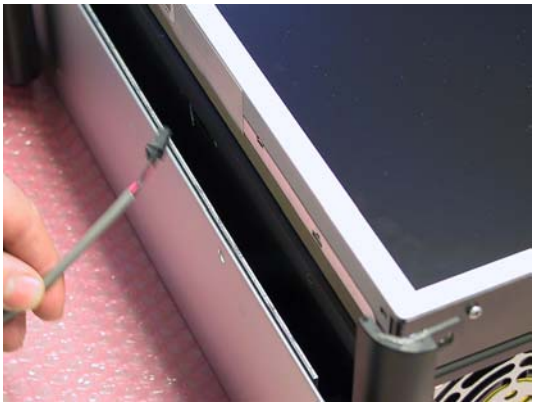


Figure 4-7

6) Gently lift the inner chassis – including the monitor assembly – away from the outer chassis as illustrated in Figures 4-8 and 4-9.

Figure 4-8

Figure 4-9

7) Use a Phillips #2 screwdriver to remove the four black countersunk screws holding the screen assembly to the chassis – two on the top (Figure 4-10) and one on each side (Figure 4-11 and Figure 4-12).

Figure 4-10

Figure 4-11

8) Observe that the monitor assemble is hinged. Gently lift the display on the side opposite the hinge (Figure 4-13) until it is in its fully open position).

Figure 4-12

Figure 4-13

Note: The display folds all of the way over until it's horizontal. In fact, it will open further until it touches the table, but this may strain the hinge. For this reason, it is strongly recommended that you place some object under the monitor to support it (this object should be covered by some soft material so as to protect the screen).

9) Use a screwdriver to disengage the latch on the monitor's power cable (Figure 4-14) and then disconnect this cable (Figure 4-15).

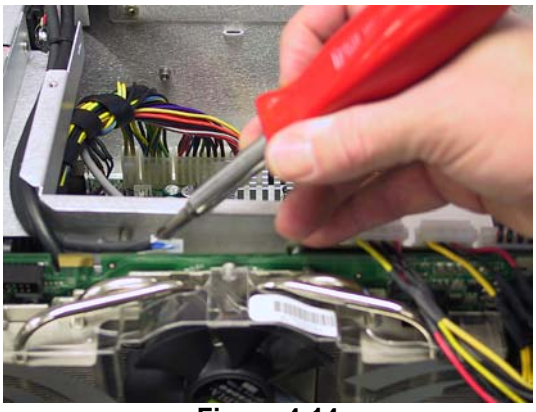


Figure 4-14

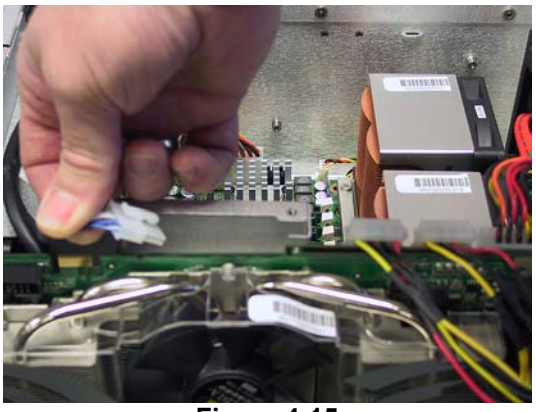


Figure 4-15

10) Use a Philips #1 screwdriver to remove the two screws attaching the over-molded DVI data cable connector to the graphics board (Figure 4-16) and gently pull the connector a little way from the system (Figure 4-17).

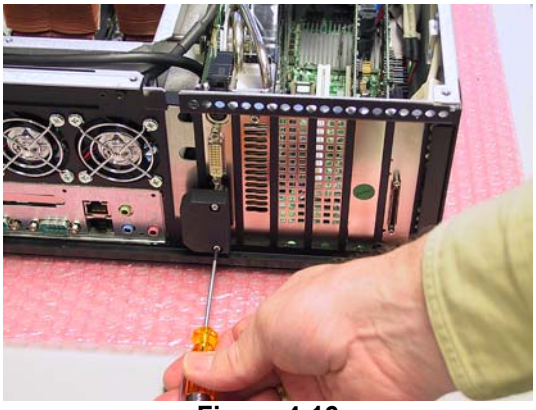


Figure 4-16

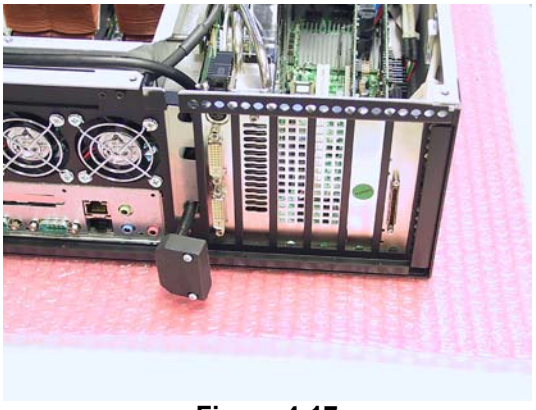


Figure 4-17

11) Use a Phillips #2 screwdriver to remove the two 6-32 screws attaching the access plate – and the special linking bracket – to the inner chassis (Figure 4-18).

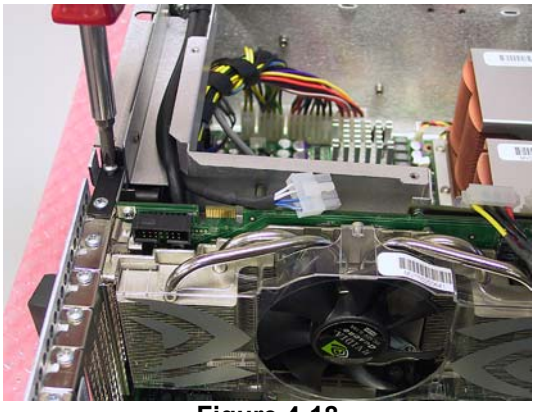


Figure 4-18

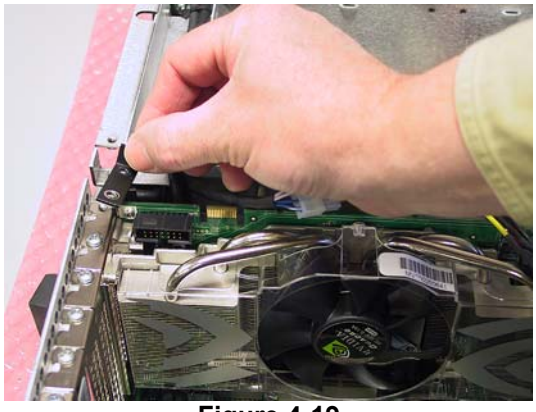


Figure 4-19

12) Lift the linking bracket away from the system (Figure 4-19) then lift the access plate away from the chassis (Figure 4-20).

Figure 4-20

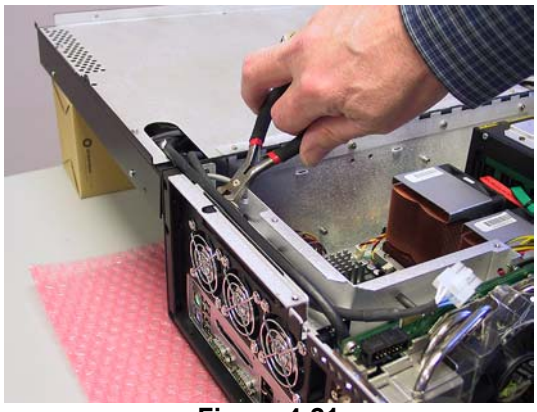


Figure 4-21

13) Carefully cut the cable ties as illustrated in (Figure 4-21).

14) Gently lift the monitor power and data cables out of the slot as illustrated in (Figure 4-22).

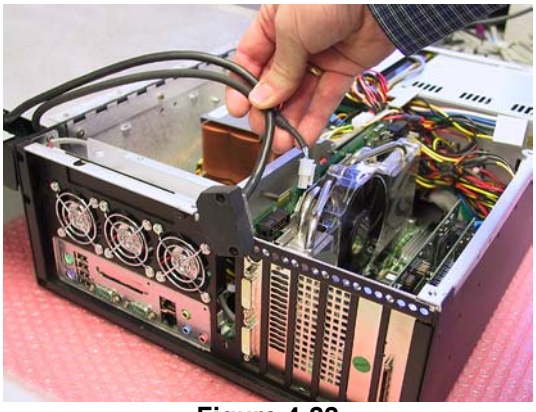


Figure 4-22

15) Place the monitor power and data cables inside the chassis out of the way while you close the display and remove the four screws – two on each side – holding the LCD panel to the main monitor display assembly (Figures 4-23 and 4-24).

Figure 4-23

Figure 4-24

16) Observe that the LCD panel can now be lifted away from the main display assembly (Figures 4-25 and 4-26). However, this step should not be performed just yet, instead proceed to step (18).

Figure 4-25

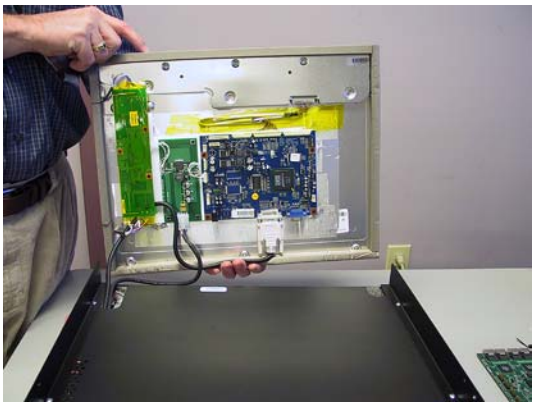


Figure 4-26

17) While carefully supporting the LCD panel, gently raise the main monitor assembly and "snake" the cables through the slot as illustrated in Figure 4-27.

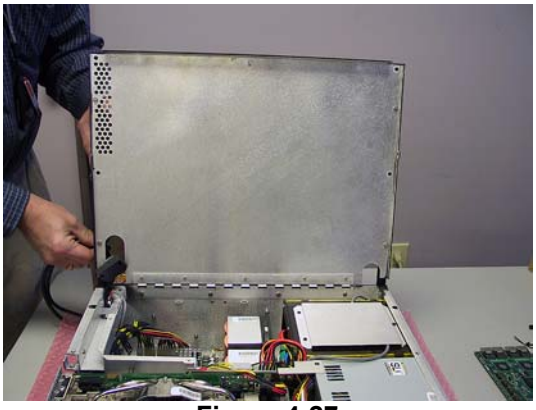


Figure 4-27

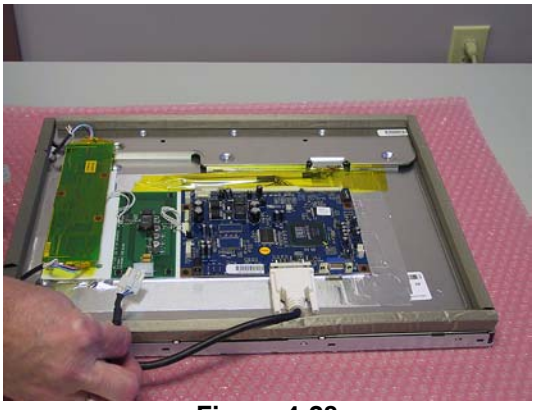


Figure 4-28

18) Gently lift the LCD away from the inner chassis and lay it face down on a protective surface. Disconnect the power cable from the LCD (Figure 4-28). Unscrew the jack screws attaching the data cable to the LCD (Figure 4-29) and detach this cable (Figure 4-30).

Figure 4-29

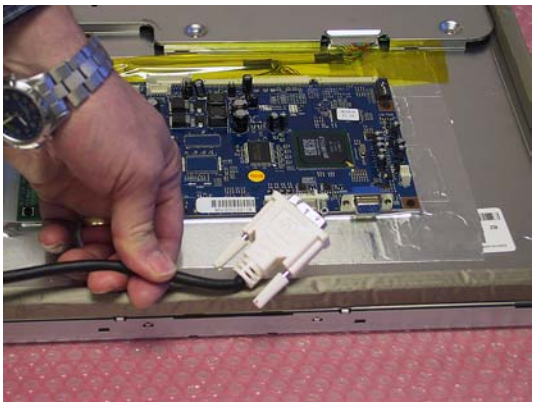


Figure 4-30

19) Take the replacement LCD provided by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Opening the Display Assembly into its Service Position

In order to replace and/or upgrade modules inside the MaxPac system, it is necessary to open the display assembly into its service position as discussed below.

1) Lay the system flat on the table with the display facing upwards (it is recommended that you lay the system on bubble wrap in order to protect the finish).

2) Use a Phillips #1 screwdriver to remove the four 4-40 3/16" black countersunk screws – two on each side – holding the monitor bezel to the main chassis (Figures 4-31 and 4-32).

Figure 4-31

Figure 4-32

3) Use a Phillips #2 screwdriver to remove the four silver screws – two on the top and two on the bottom holding the main chassis to the monitor bezel (Figures 4-33 and 4-34).

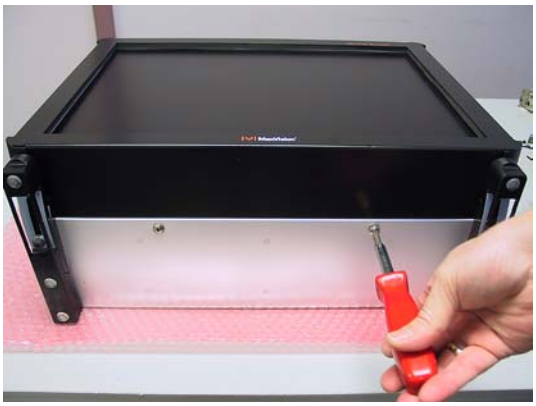


Figure 4-33

Figure 4-34

4) Gently lift the monitor bezel away from the main chassis. Observe the soft power cable as illustrated in Figure 4-35.

Figure 4-35

5) Disconnect the soft power cable as illustrated in Figures 4-36 and 4-37.

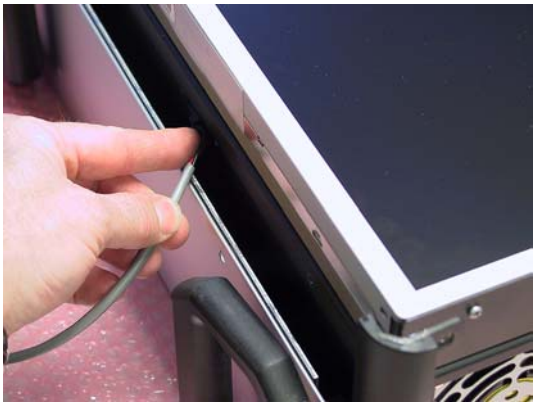


Figure 4-36

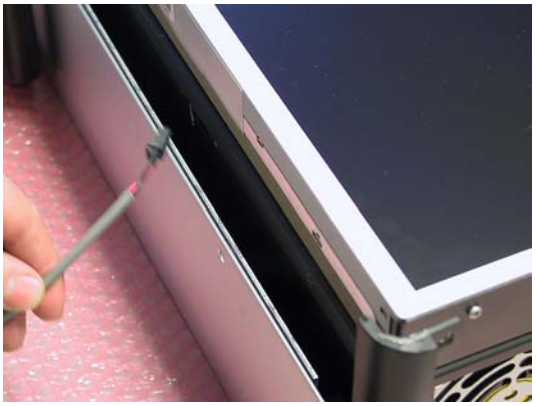


Figure 4-37

Note: Certain components can be replaced without removing the inner chassis from the outer chassis. Some of these components include memory, main power supply, PCI and PCI Express boards. While it is fairly easy to remove the inner chassis for the Single-Display XRA1 it is more difficult for the Dual/Triple-Display XRA2/3. Some photos will include the outer chassis while others will not.

6) Gently lift the inner chassis – including the monitor assembly – away from the outer chassis as illustrated in Figures 4-38 and 4-39.

Figure 4-38

Figure 4-39

7) Use a Phillips #2 screwdriver to remove the four black countersunk screws holding the screen assembly to the chassis – two on the top (Figure 4-40) and one on each side (Figure 4-41 and Figure 4-42).

Figure 4-40

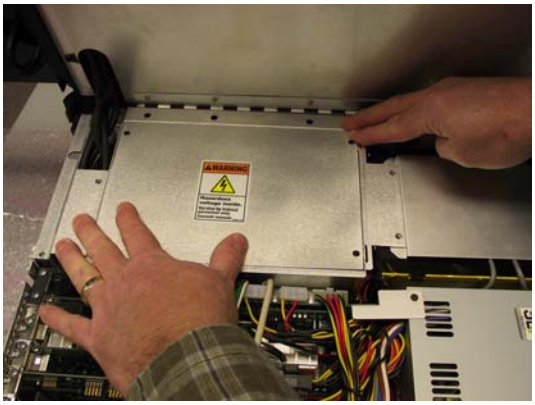
Figure 4-41

8) Observe that the monitor assemble is hinged. Gently lift the display on the side opposite the hinge (Figure 4-13) until it is in its fully open position.

Figure 4-42

Figure 4-43

Note: The display folds all of the way over until it's horizontal. In fact, it will open further until it touches the table, but this may strain the hinge. For this reason, it is strongly recommended that you place some object under the monitor to support it (this object should be covered by some soft material so as to protect the screen).



Note: Your MaxPac8230 may contain the optional UPS Power Management System. In this case the inside of the inner chassis will look similar to the photo above. Please refer to *Chapter 6* for details of the installation and removal of the UPS System. The UPS System must be removed to gain access to the memory and CPUs.

Memory

Note: Due to the fact that high-end computer systems can experience a host of memory compatibility issues and problems, you should only use replacement and/or additional memory sticks supplied by MaxVision.

Note: The MaxPac 8230 uses a Fully Buffered DDR2 memory (FB-DIMM or FBD). Specifically the MaxPac 8230 uses FBD DDR2 667MHz. What separates FBD from regular DDR2 is a chip on each module called the AMB (Advanced Memory Buffer), which buffers all data/address/command requests to the DRAM devices. This buffering allows up to 12GB of memory to be installed in the MaxPac 8230. FB-DIMMs REQUIRE that memory sticks be used in pairs, with each pair having the same size/capacity/speed. Population of the first pair of FBD occupies the first and second DIMM slots (labeled DIMM1A and DIMM1B on the motherboard). Population of the second pair of FBD occupies the third and fourth DIMM slots (labeled DIMM2A and DIMM2B).

Note: In the event that you begin to experience problems with the memory that is already resident in your MaxPac, you must first determine which stick has failed under the direction of MaxVision support.

Note: The BIOS will always report the true amount of physical memory that is present in the system. This may be as much as 12 GB. However, the actual amount of memory that can be seen by the system is determined by the main operating system (OS). With regard to the 32-bit Windows® XP Professional operating system, for example, in the case of a MaxPac 8230 XRA2 (dual-screen) configuration, the maximum amount of memory reported in the **System Information** dialog is 3 GB; by comparison, in the case of a MaxPac 8230 XRA3 (triple-screen) configuration, the maximum amount of memory reported in the system information dialog is 2 GB. (Further note that even when the OS reports 3 GB for the dual-screen configuration, the maximum amount of shared user space is actually only 2 GB.) However, with regard to the 64-bit Windows XP Professional x64 Edition of the operating system, the **System Information** dialog will accurately report the true amount of physical

memory (which can theoretically be up to 128 GB) and all of this memory will be available to the applications.

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) In order to remove and replace a memory stick, gently press down-and-out on the two plastic “rabbit-ears” at either side of the stick which will cause it to pop out (Figure 4-44), and then remove the stick from the system (Figure 4-45).

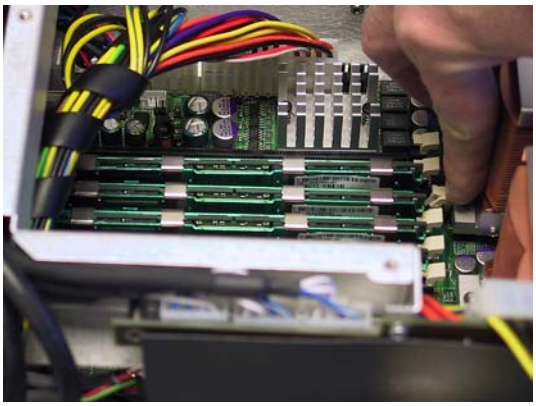


Figure 4-44

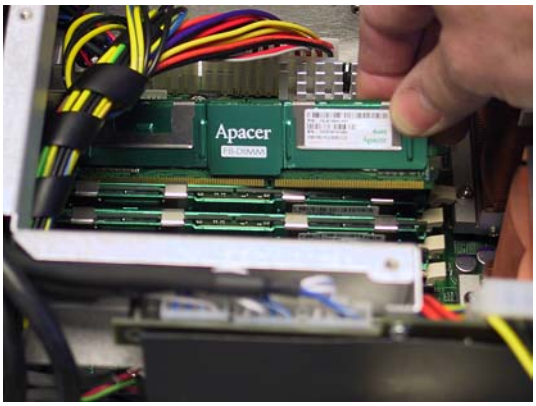


Figure 4-45

3) Observe that the memory sticks are keyed such that they can only be inserted one way. Take the new (replacement) memory stick sent to you by MaxVision support and gently press it down into the original slot on the motherboard.
4) Return the system to its initial condition by reversing the order of the operations discussed at the beginning of this section.

PCI Cards (General)

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) If you are replacing an existing PCI card, use a Phillips #2 screwdriver to remove the 6-32 screw attaching the card’s retaining bracket to the inner chassis as shown in Figure 4-46. (If you are adding a new card, remove the corresponding blanking plate screw.)

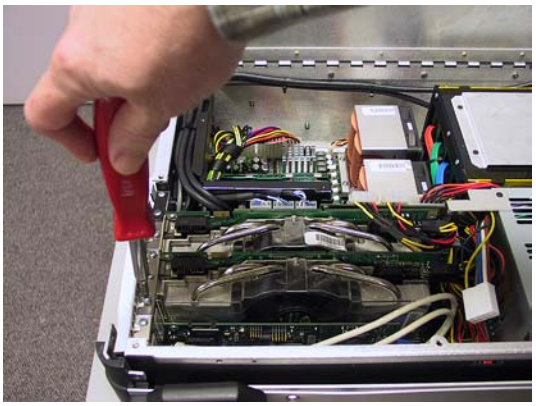


Figure 4-46

Figure 4-47

3) Gently pull out the old card as shown in Figure 4-47.

4) This particular example features a SATA RAID controller card. In this case, you also need to disconnect the data cables from the card as shown in Figure 4-48 (see notes below).

Figure 4-48

5) Take the new/replacement PCI card and incorporate it into the system by performing the steps described above in reverse order.

Note: It is important to ensure that theses cables are attached to the new card in the same positions as they occupied on the original card.

Note: In the case of these SATA cables, there is no good locking mechanism to ensure that they remain attached to the card, so MaxVision uses a special adhesive. This adhesive is somewhat flexible and the connectors can be broken free of the bond by simply pulling the SATA connector straight out (do not pull on SATA cable itself). Reapply adhesive (provided by MaxVision support) after reattaching the cables to the new card.

Note: Ensure that the tongue on the new/replacement card's faceplate lines up with the slot in the chassis (you may have to bend the tongue slightly in the case of a new card).

PCI Express Card (Primary)

In the case of a single-screen MaxPac system, the graphics will be handled by the PCI Express card located in the primary PCI Express slot. This topic discusses the replacement of the Primary PCI Express card.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) Use a Phillips #1 screwdriver to remove the screws holding the over-molded video cables to the PCI Express graphics card (Figure 4-49). Gently disengage the over-molded DVI connector from the PCI Express graphics board (Figure 4-50).

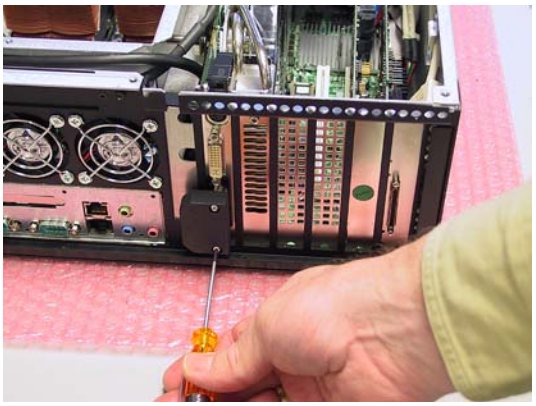


Figure 4-49

Figure 4-50

3) Use a Phillips #2 screwdriver to remove the two 6-32 screws attaching the card's retaining bracket – and the special linking bracket – to the inner chassis (Figure 4-51) and lift the linking bracket away from the system (Figure 4-52).

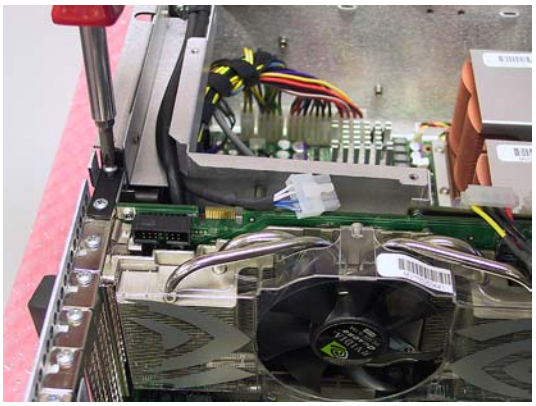


Figure 4-51

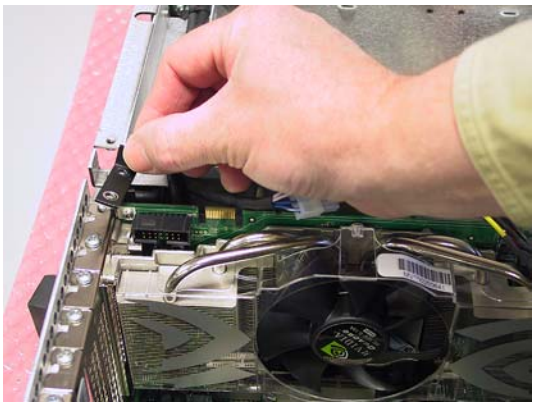


Figure 4-52

4) Some PCI Express cards may have an auxiliary power connector. If so, disconnect it as shown in Figure 4-53.

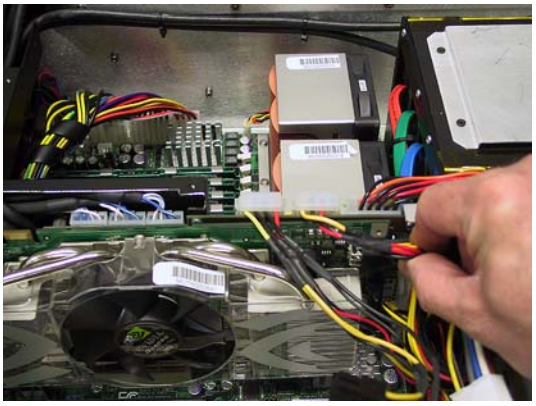


Figure 4-53

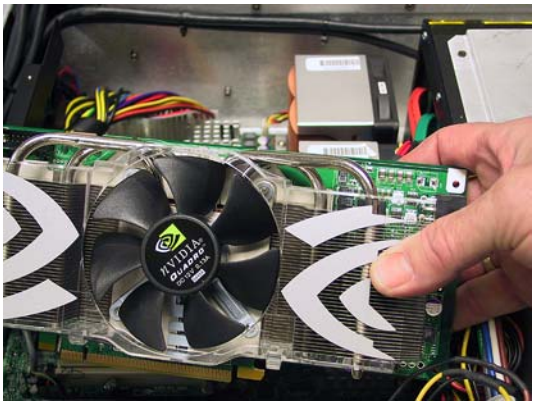


Figure 4-54

5) Gently remove the card from the system (Figure 5-54).

6) Take the new PCI Express card and incorporate it into the system by performing the steps described above in reverse order.

Note: Ensure that the tongue on the new/replacement card's faceplate lines up with the slot in the chassis (you may have to bend the tongue slightly in the case of a new card).

Note: When removing the video cables keep track of the order of the connections to the PCI Express card. The right-hand display is connected to the top connector and the center display is connected to the bottom connector of the PCI Express card. In the case of a triple-display system, the left display connector (which is a different shape to the other two) is attached to the bottom DVII connector of the secondary PCI Express graphics board.

Note: In this system there is no plastic latch holding the rear of the PCI Express card. The foam attached to the hinged inner lid of the MaxPac will hold pressure to the back of the card when properly secured

Power Distribution Assembly

Note that the following procedure may be facilitated by first removing the PCI and PCI Express cards as discussed earlier in that chapter; however, removing these cards is not obligatory.

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Unplug the top power input connector from the power distribution board (Figure 4-55).

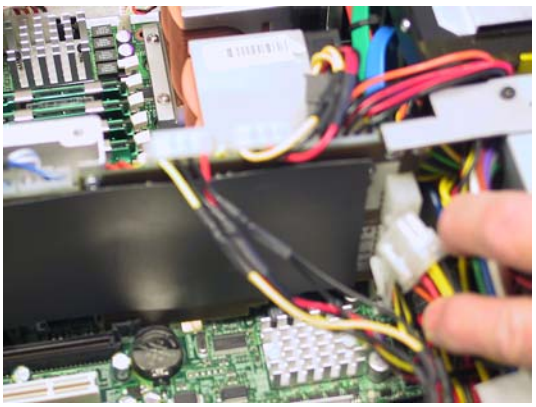


Figure 4-55

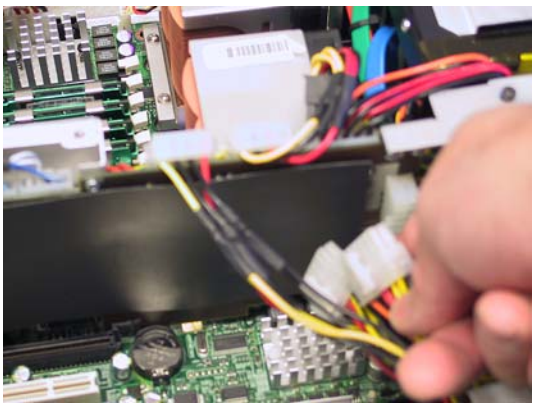


Figure 4-56

3) Unplug the bottom power input connector from the power distribution board (Figure 4-56).
4) Unplug the CD/DVD power output connector from the power distribution board (Figure 4-57).

Figure 4-57

Figure 4-58

5) Use an Allen key/tool to remove the screw attaching the power distribution assembly to the power supply unit (Figure 4-58).

6) Use a Phillips #1 screwdriver to remove the two 4-40 screws attaching the power distribution assembly to the side of the inner chassis (Figures 4-59).

Figure 4-59

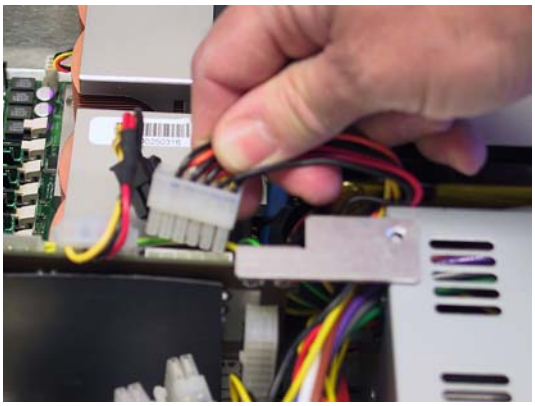


Figure 4-60

7) Gently remove the input power connector to the power distribution board (note the latch on the back side of the connector) as shown in Figure 4-60.

8) Gently remove the display power cable from the power distribution board (Figures 4-61 and 4-62) Cut all cable ties holding the cables to the aluminum cable guide bracket.

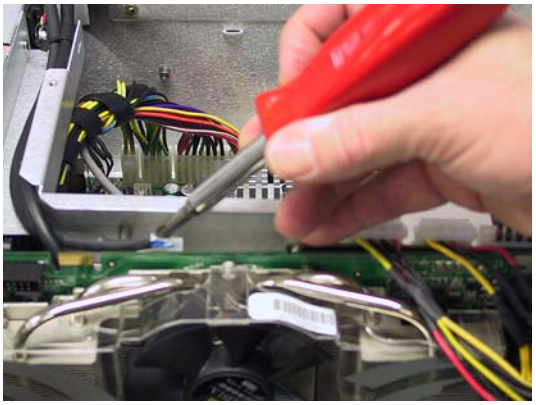


Figure 4-61

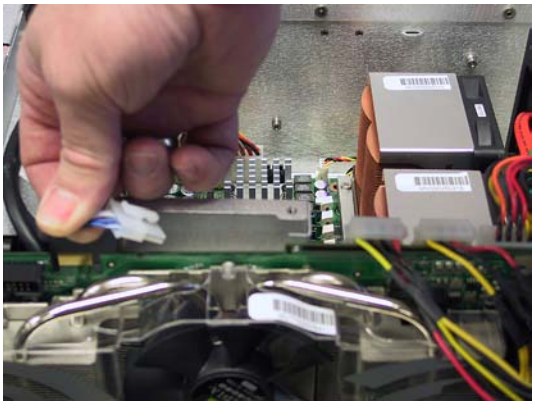


Figure 4-62

9) Disconnect the right speaker cable from the power distribution board as illustrated in Figures 4-63 and 4-64.

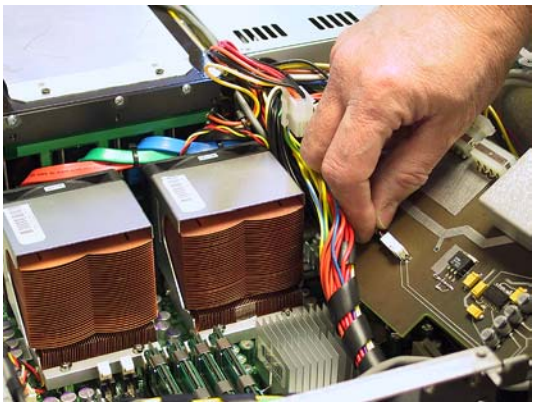


Figure 4-63

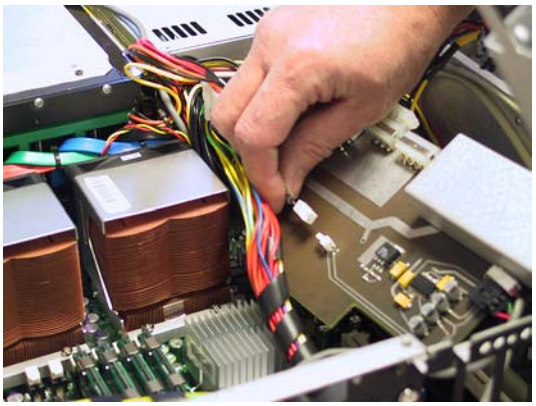


Figure 4-64

10) Disconnect the audio input cable from the power distribution board as illustrated in Figure 4-65. This connector is black and has a latch. Note that the audio amplifier is also on the power distribution board.

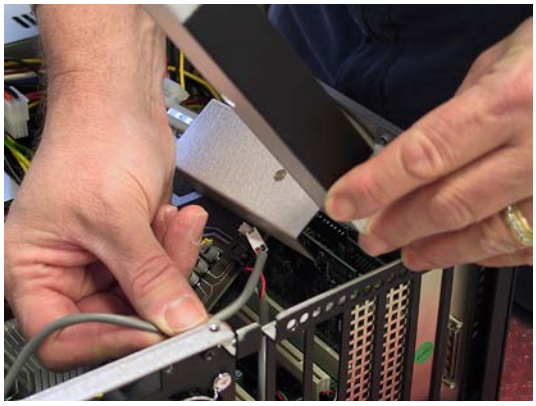


Figure 4-65

11) Disconnect the left speaker cable from the power distribution board as illustrated in Figure 4-66.

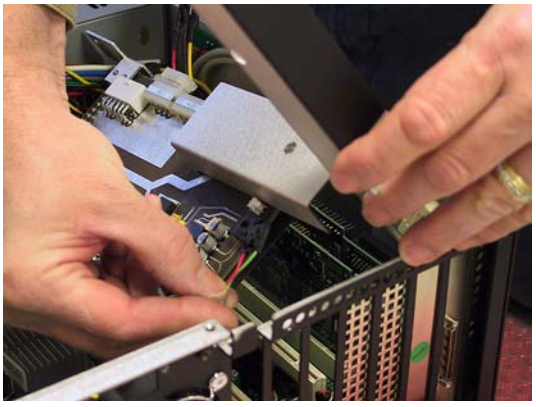


Figure 4-66

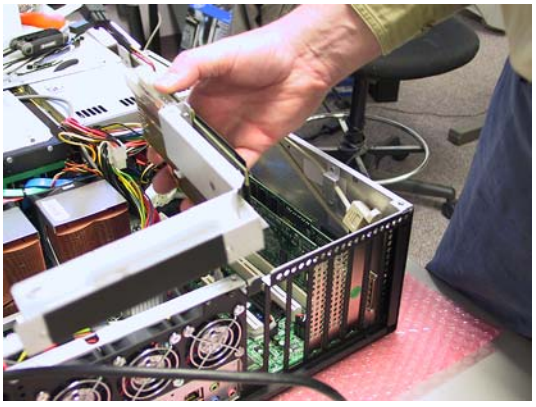


Figure 4-67

12) Gently lift the power distribution assembly up and away from the inner chassis (Figure 4-67).

13) Take the new power distribution assembly supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Hard Drive Magazine (also Individual Hard Drives)

1) Undo the knurled screw holding the middle binding bar (Figure 4-68) and then remove the binding bar (Figure 4-69).

Figure 4-68

Figure 4-69

2) Gently pull on the magazine handle to extract the magazine from the inner chassis (Figure 4-70).

Figure 4-70

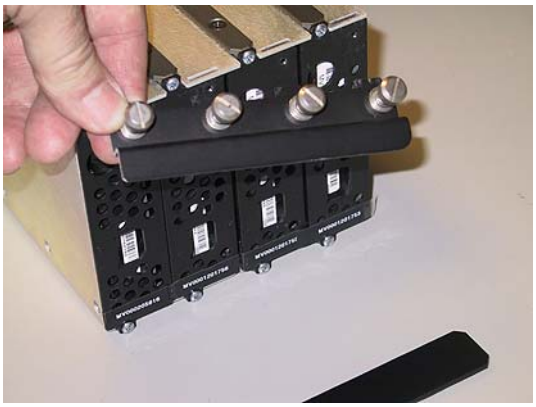


Figure 4-71

3) In order to replace an individual drive, turn each of the four knurled screws attached to the upper binding bar until they pop out and then remove the upper binding bar (Figure 4-71). Note that the upper binding bar has tabs that are inserted into slots of the main drive cage.

Figure 4-72

4) Gently grasp the drive in question and pull it out of the magazine (Figure 4-72).

Note: These disks are hot-swappable, so you can replace individual drives while the magazine remains resident in the system. When the upper binding bar is removed the 4 slots in the main drive cage may slide back. Make sure that when replacing the upper binding bar that the tabs go into these slots.

Note: In order to easily identify these disks, MaxVision serial numbers are affixed to the bottom edge (the small white strips shown toward the bottom of the drives in Figure 4-72). Recording the positions and serial numbers of your disks for each MaxPac is advisable.

Optical Drive (CD/DVD)

1) Note that it is not necessary to open the display assembly into its service position in order to perform this procedure.
2) Undo the two knurled attaching the CD/DVD drive to the outside of the system's main chassis (Figure 4-73).

Figure 4-73

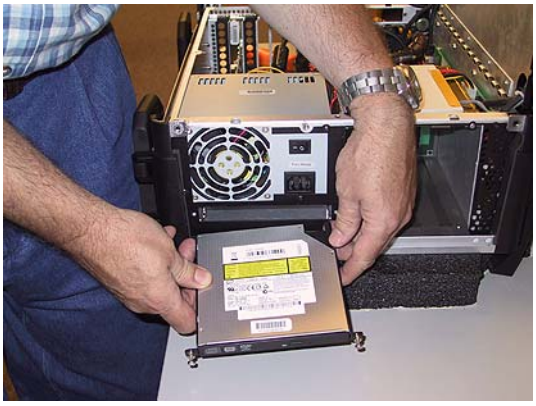


Figure 4-74

3) Gently remove the CD/DVD drive from the system (Figure 4-74).
4) Take the new CD/DVD assembly as supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Optical Drive (CD/DVD) Backplane

Note: The CD/DVD backplane cannot be easily replaced without first removing the main Power Supply Unit (PSU). In the rare case that support advises that the CD/DVD backplane needs replacing refer to the section on the PSU later in this chapter and then return to this section.

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Remove the CD/DVD drive as discussed in the previous topic.
3) Remove the ATA cable (observing where the red stripe is for future reference) as illustrated in Figure 4-75.

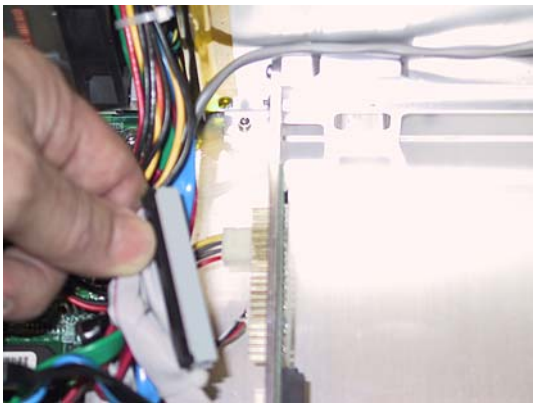


Figure 4-75

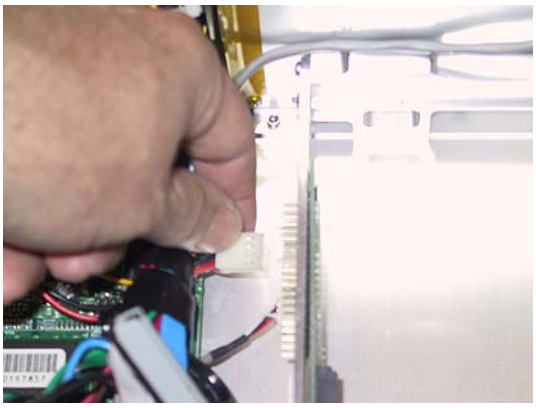


Figure 4-76

4) Remove the main power connector as illustrated in Figure 4-76 (release the latch with your finger or thumb nail while pulling ion the cable).

5) Remove the CD/Audio cable as illustrated in Figure 4-77.

Figure 4-77

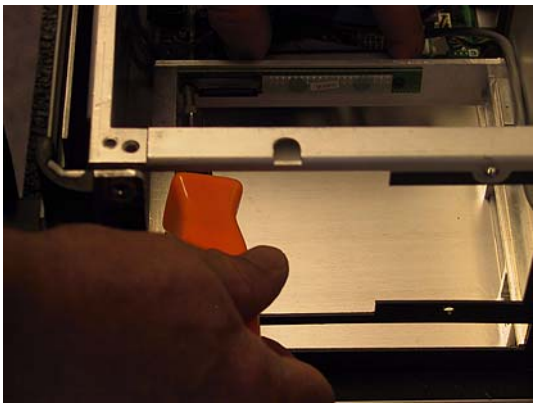


Figure 4-78

6) Use a Philips #1 screwdriver to remove the two screws attaching the CD/DVD backplane to the main chassis as illustrated in Figure 5-78.

7) Gently remove the CD/DVD backplane as illustrated in Figure 4-79.

8) Present the replacement CD/DVD backplane supplied by MaxVision support to the inner chassis and perform the steps described above in reverse order.

Note: If the replacement CD/DVD backplane does not come equipped with a protective (insulating) Mylar cover, remove this piece from your original backplane and reattach it to the new backplane.

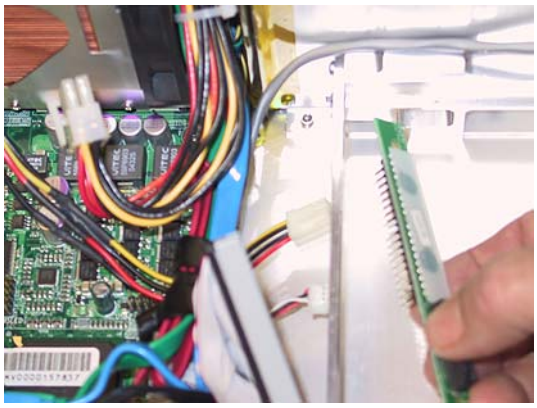


Figure 4-79

External Cooling Fan Assembly

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Disconnect the external cooling fan assembly's power supply cable from motherboard. Simply pull it away using your fingers as shown in Figures 4-80 and 4-81.

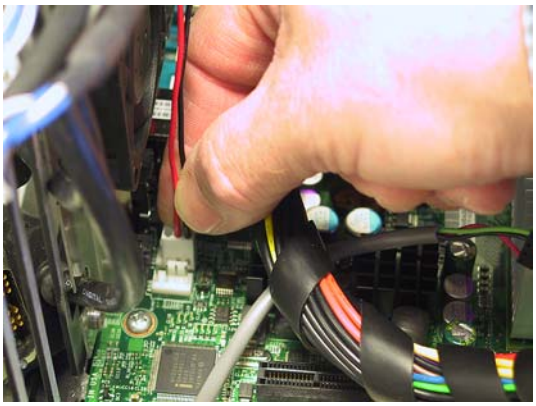


Figure 4-80

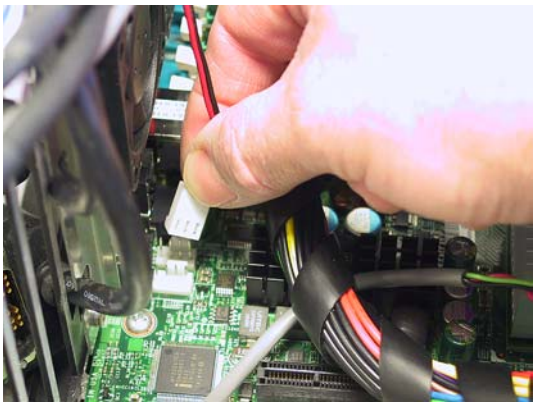


Figure 4-81

3) All three fans must be treated as a single assembly, so remove the twelve self-tapping Plastite screws (4 per fan) attaching the fans to the internal chassis (Figure 4-82) and then gently lift the fan assembly away from the inner chassis (Figure 4-83).
4) Present the replacement fan assembly supplied by MaxVision support to the inner chassis and perform the steps described above in reverse order.

Note: The fan guards are secured to the outside of the chassis by the Plastite screws. When the new fan assembly is replaced make sure the fan guards are replaced.

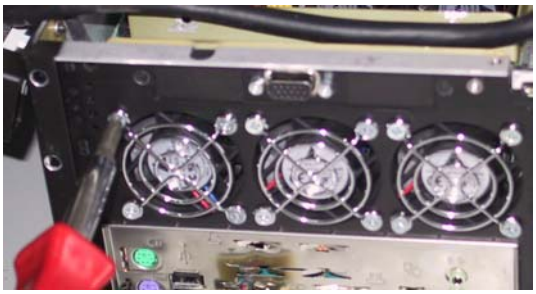


Figure 4-82

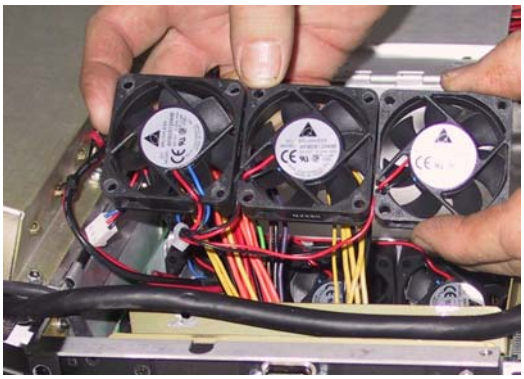


Figure 4-83

CPU Cooling Fans

Note: The photos in this section assume the Power Distribution Assembly has been previously removed. These photos more clearly illustrate the replacement of the CPU Cooling Fans but they can be replaced with the Power Distribution Assembly installed as well.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) There are two screws on either side of the cooling fan assembly. Use a Phillips #2 screwdriver to loosen these captured screws (Figures 4-84 and 4-85).

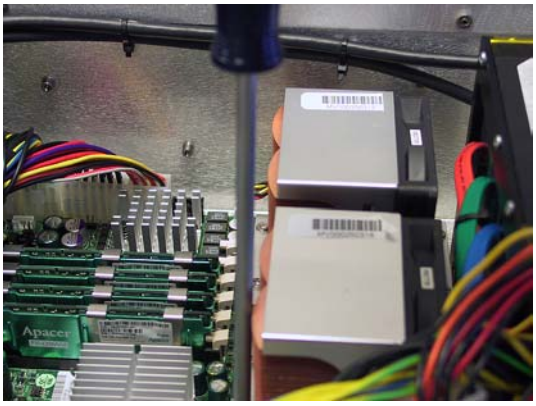


Figure 4-84

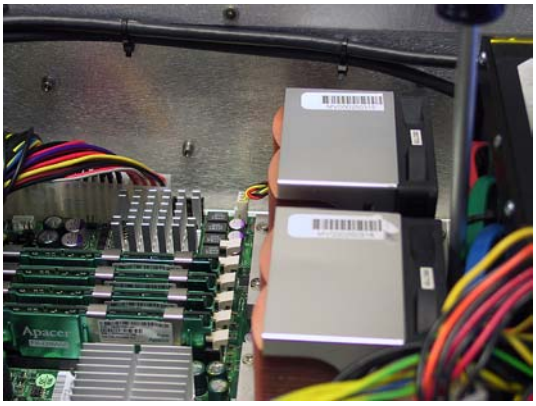


Figure 4-85

3) Gently lift the cooling fan assembly away from the chassis as illustrated in Figure 4-86.

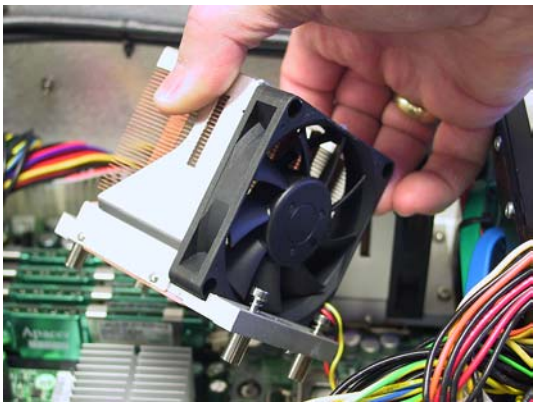


Figure 4-86

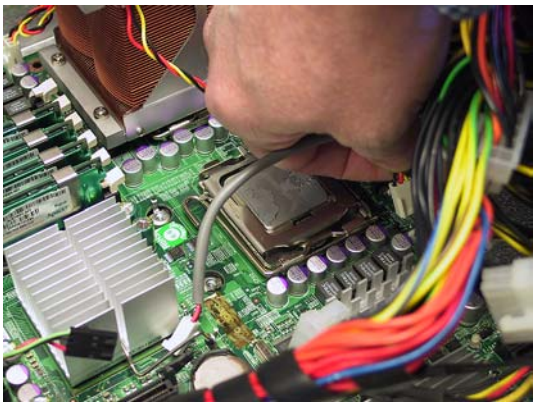


Figure 4-87

4) Each fan has its own power connector that is attached to the main motherboard. Disconnect the power connector associated with the failed fan (Figure 4-87)

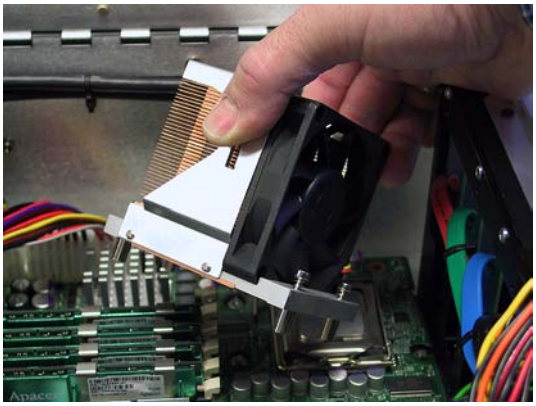


Figure 4-88

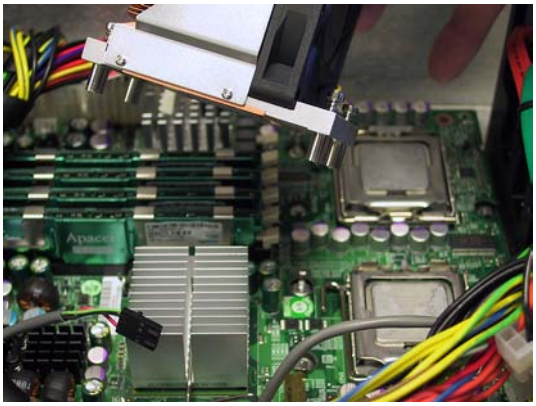


Figure 4-89

5) Figures 4-88 and 4-89 illustrate the removal of the second CPU Fan Assembly.

6) Present the replacement fan assembly supplied by MaxVision support to the CPU and perform the steps described above in reverse order. Ensure the fan assembly in screwed in with equal pressure on all side and the fan power connector is replaced prior to powering up the system to avoid CPU damage.

Main Power Supply Unit (PSU)

Depending on the problem you are experiencing – and as directed by MaxVision support – you may need to replace the entire power supply as discussed below.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) Remove the video distribution board as discussed earlier in this chapter.

3) Disconnect the EPS12V 8-pin (4 x 2) power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the interior of the chassis) into the body of the connector (Figures 4-90 and 4-91).

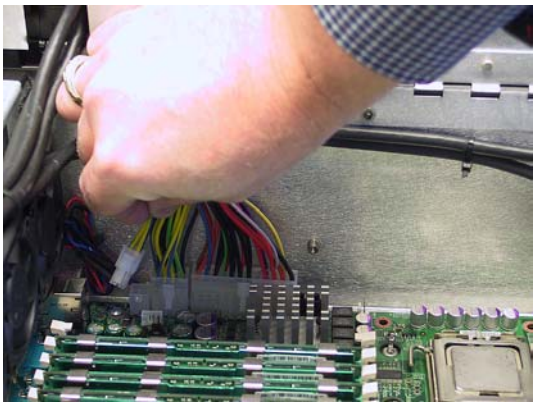


Figure 4-90

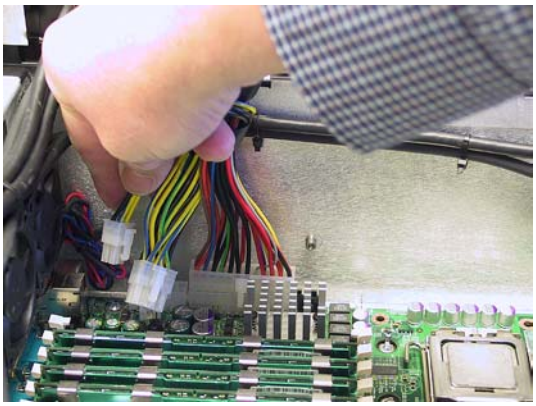


Figure 4-91

4) Disconnect the ATX 24-pin power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the bottom of the chassis) into the body of the connector (Figures 4-92 and 4-93).

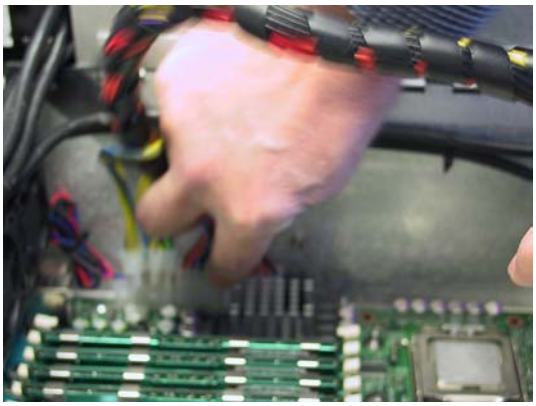


Figure 4-92

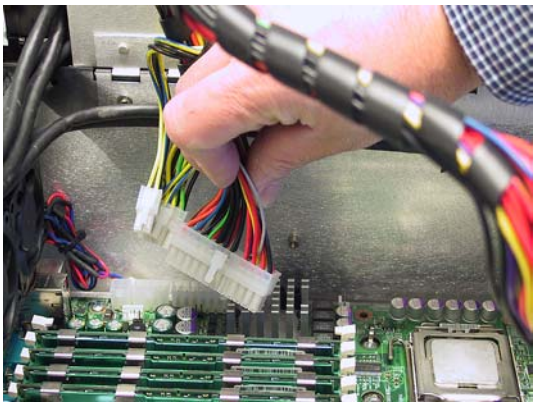


Figure 4-93

5) Use a Phillips #2 screwdriver to remove the four screws attaching the power supply unit to the side of the inner chassis (Figures 4-94 through 4-97).

Note: Observe the way in which the inner chassis is lifted in Figures 4-95 and 4-96 so as to facilitate access to two of these screws.

Figure 4-94

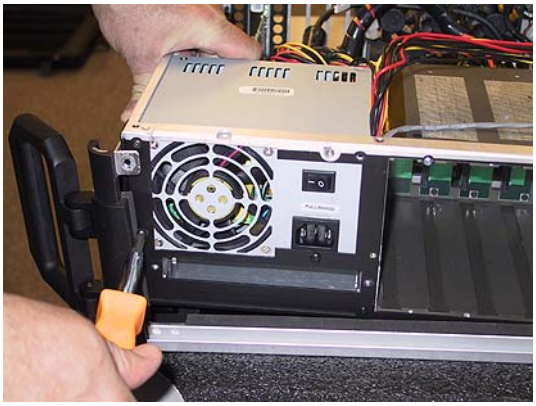


Figure 4-95

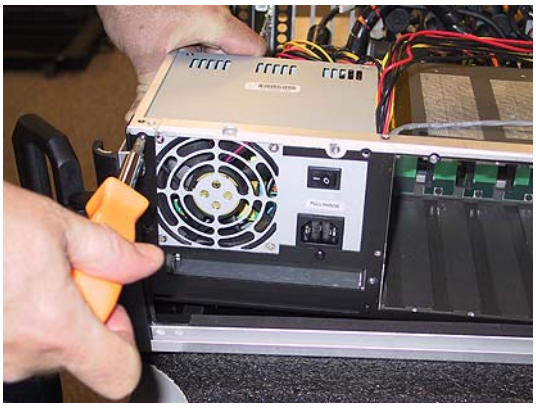


Figure 4-96

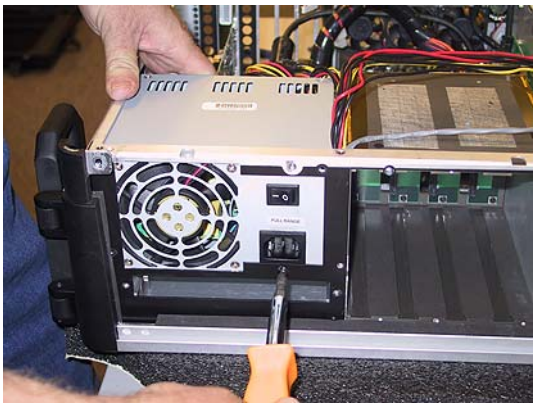


Figure 4-97

6) Gently lift the power supply out of the system as illustrated in Figure 4-98.

Figure 4-98

7) Take the new main power supply unit supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Motherboard

Replacing the motherboard is non-trivial. It is easy to damage the motherboard unless one has the appropriate tools and training. For this reason, you must either return the MaxPac system to MaxVision or be factory trained by MaxVision personnel (see *Appendix D* for more details about contacting MaxVision support and returning your MaxPac to MaxVision).

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Remove any PCI and PCI Express cards as discussed earlier in this chapter.
3) Remove the Power Distribution Board as detailed earlier in this chapter.
4) In order to replace the motherboard, the display power cables, display data cables and soft power cable must be disconnected. Cut any cable ties that are holding the display power and data cables in place as shown in figures 4-99 through 4-101

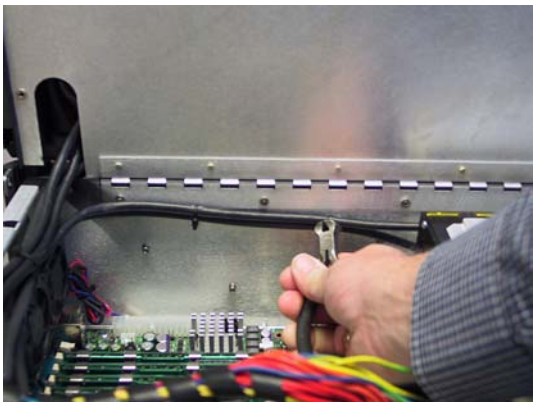


Figure 4-99

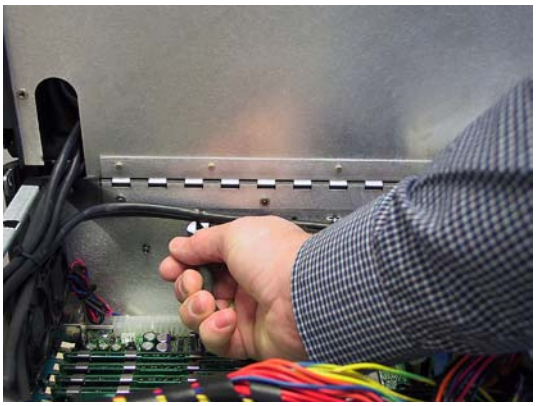


Figure 4-100

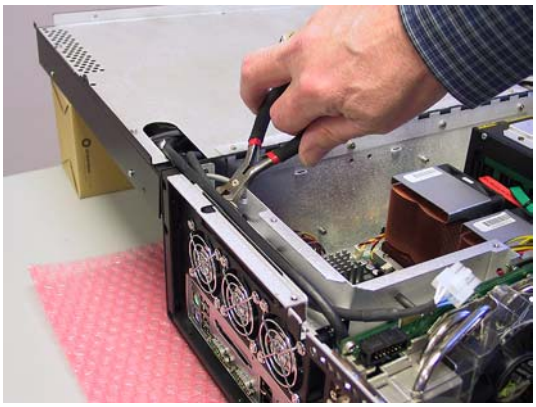


Figure 4-101

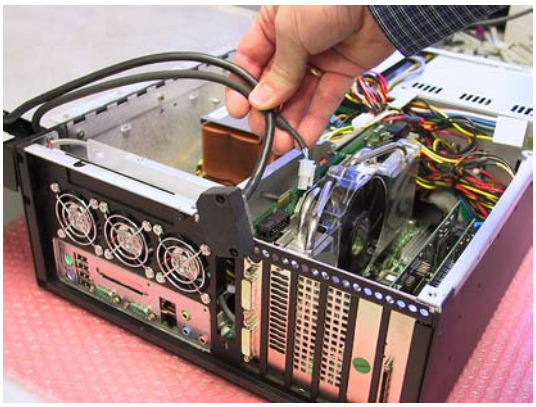


Figure 4-102

5) Remove the video data cable from the slot leading to the exterior of the left side of the chassis as illustrated in Figure 4-102.

6) Use a Phillips #1 screwdriver to remove the three 4-40 screws holding the wire harness protector plate (Figure 4-103), then gently remove the protector plate to expose the right speaker cables (Figure 4-104).

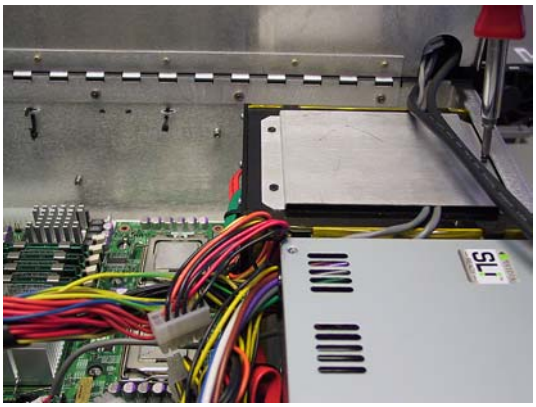


Figure 4-103

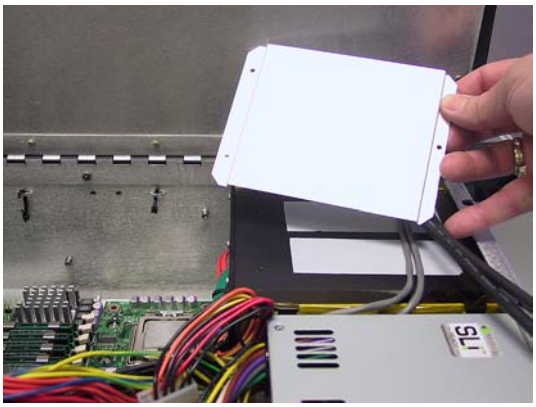


Figure 4-104

7) The soft power cable must be removed from the motherboard connection posts (the location of this connector is pointed out in 4-105). Observe that this cable connector is attached to the motherboard with a flexible adhesive (such as Marine Goop). Simply pull the connector (not the wire) until the adhesive gives.

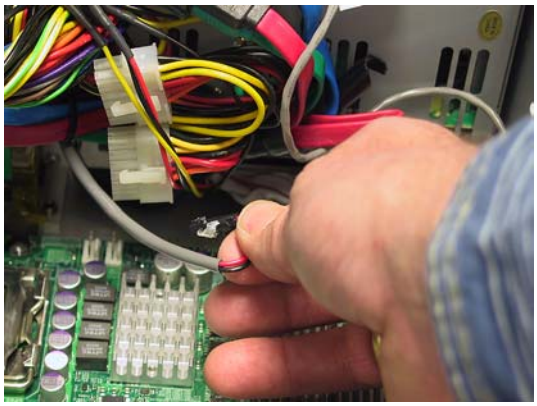


Figure 4-105

8) There are two screws on either side of the cooling fan assembly. Use a Phillips #2 screwdriver to loosen these captured screws (Figures 4-106 and 4-107).

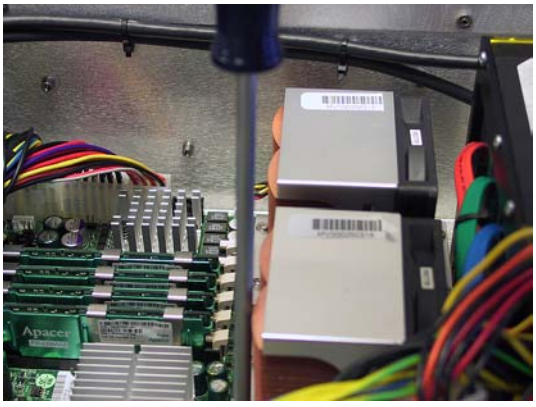


Figure 4-106

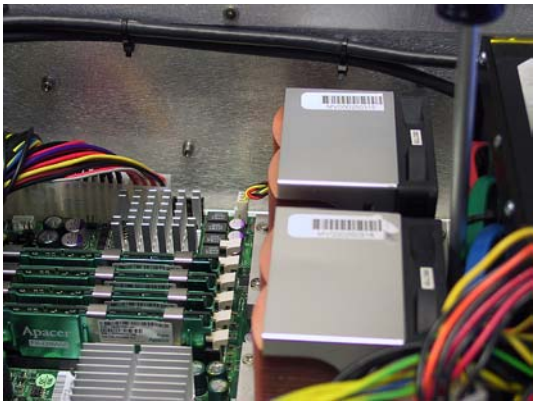


Figure 4-107

9)Gently lift the cooling fan assembly away from the chassis as illustrated in Figure 4-108.

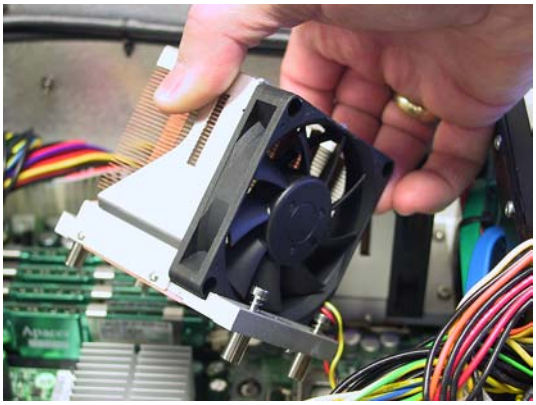


Figure 4-108

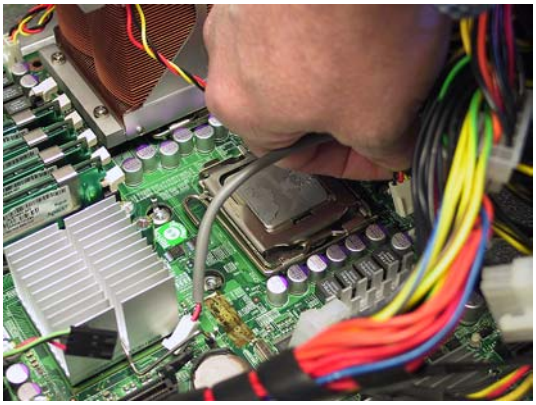


Figure 4-109

10) Each fan has its own power connector that is attached to the main motherboard. Disconnect the power connector associated with the CPU fan (Figure 4-109).

11) Figures 4-110 and 4-111 illustrate the removal of the second CPU Fan Assembly.

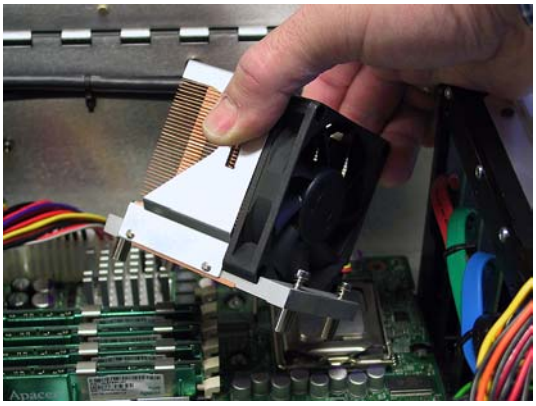


Figure 4-110

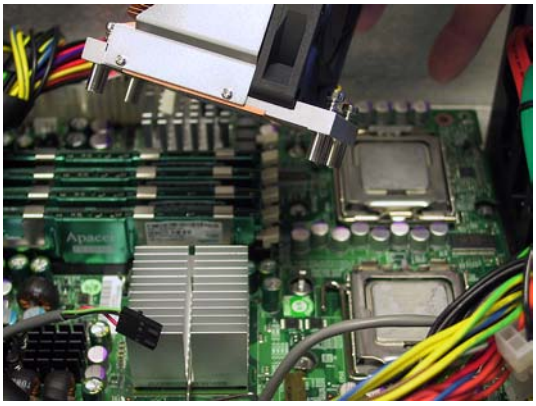


Figure 4-111

12) Remove the screws from the sides and bottom of the shadow box as shown in Figure 4-112 through 4-115.

Figure 4-112

Figure 4-113

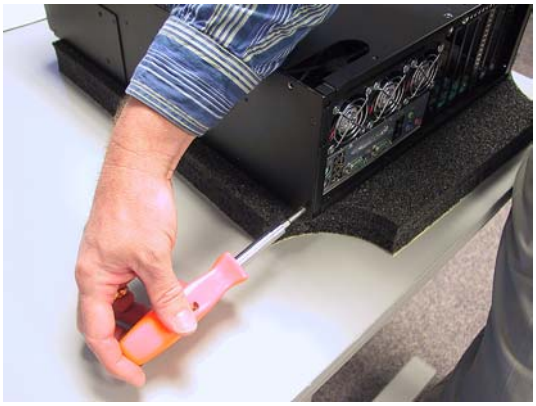


Figure 4-114

Figure 4-115

13) Disconnect the external cooling fan assembly's power supply cable from the motherboard. Simply pull it away using your fingers as shown in Figures 4-116 and 4-117.

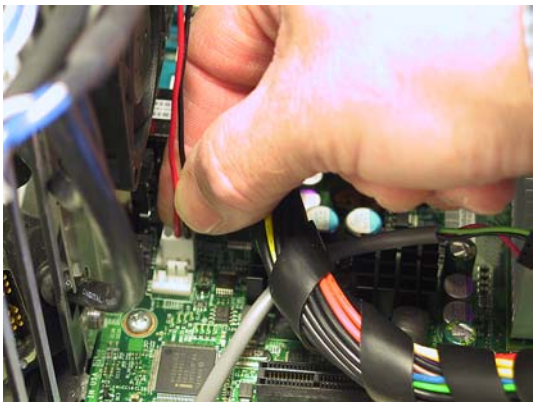


Figure 4-116

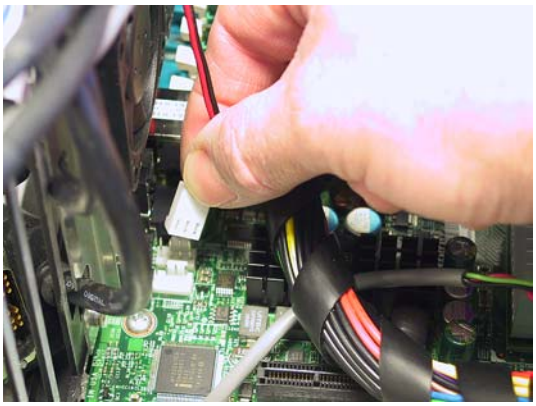


Figure 4-117

14) Remove the shadow box as shown in Figure 4-118.

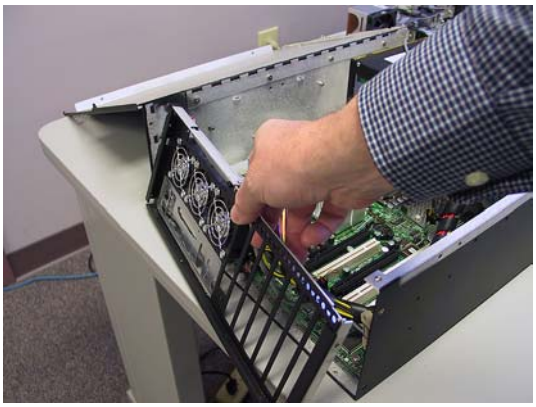


Figure 4-118

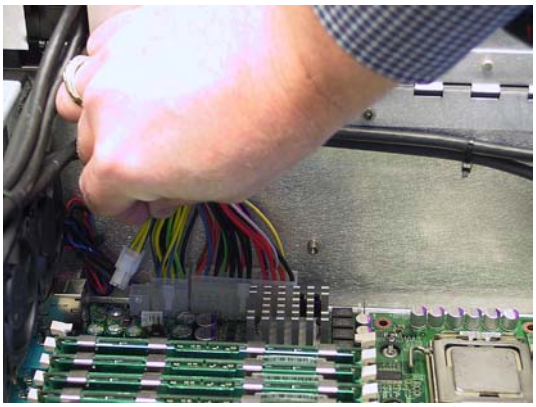


Figure 4-119

15) Disconnect the EPS12V 4-pin and EPS12V 8-pin (4 x 2) power connectors from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the interior of the chassis) into the body of the connector (Figures 4-119 and 4-120).

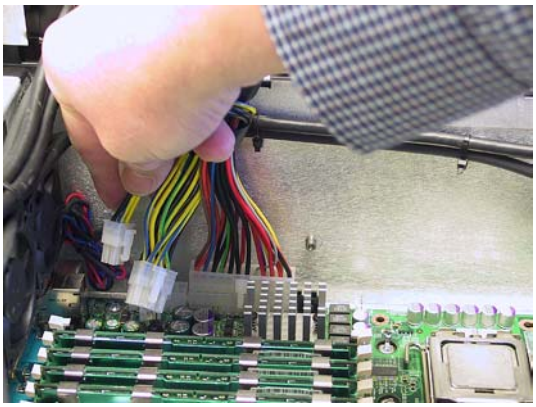


Figure 4-120

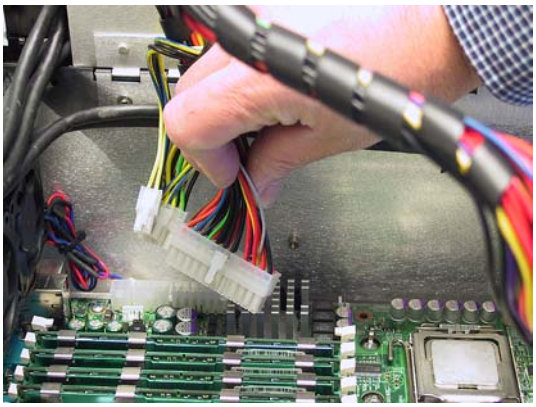


Figure 4-121

16) Disconnect the ATX 24-pin power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the bottom of the chassis) into the body of the connector (Figures 4-121).

17) Remove the audio-out cable that normally connects between the motherboard to the power distribution board (disconnect this cable from the motherboard) as shown in Figure 4-122. Observe the polarity of this connection.

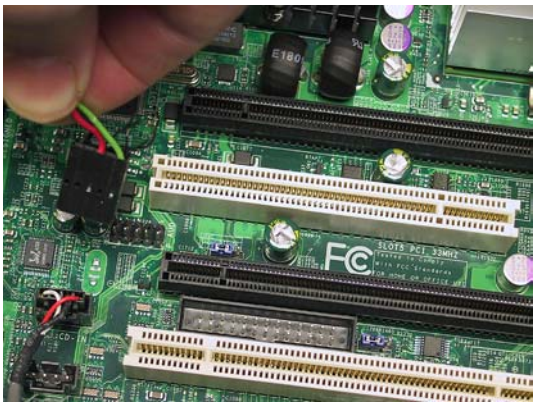


Figure 4-122

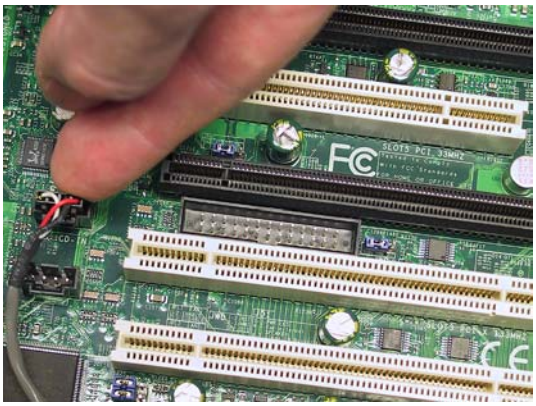


Figure 4-123

18) Remove the CD Audio In cable from the motherboard as illustrated in Figure 4-123.

19) Remove the Internal USB cable connection from the motherboard as illustrated in Figure 4-124. These internal USB cables are normally used for USB Security Devices common with many applications.

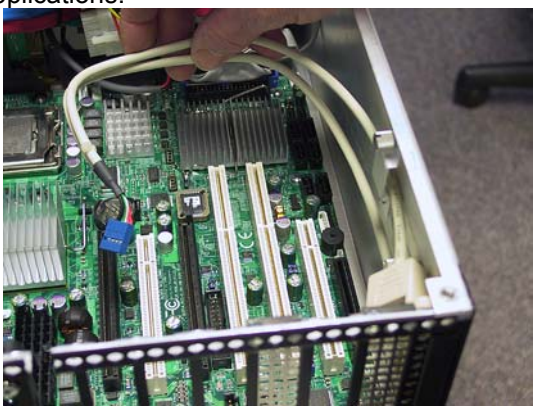


Figure 4-124

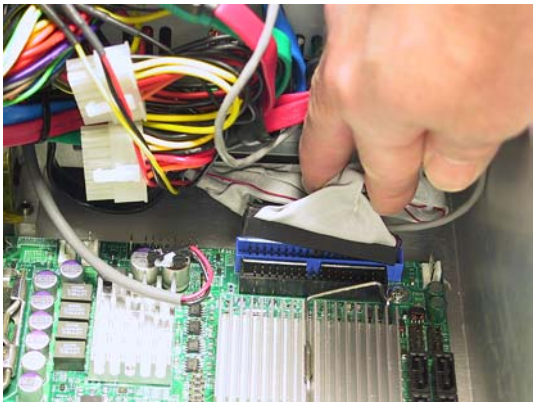


Figure 4-125

20) Remove the DVD ATA cable connecting to the ATA port of the motherboard as shown in Figure 4-125.

21) Remove the screws securing the motherboard to the inner chassis assembly as shown in Figures 4-126 and 4-127.

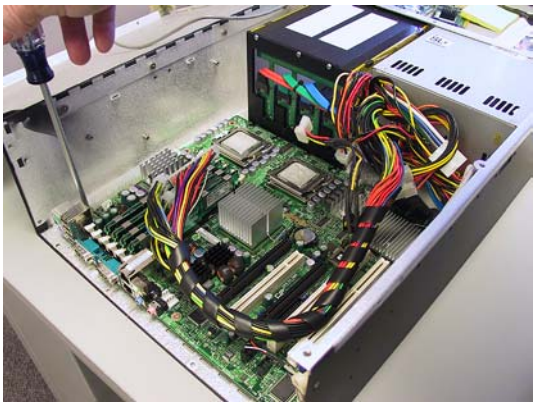


Figure 4-126

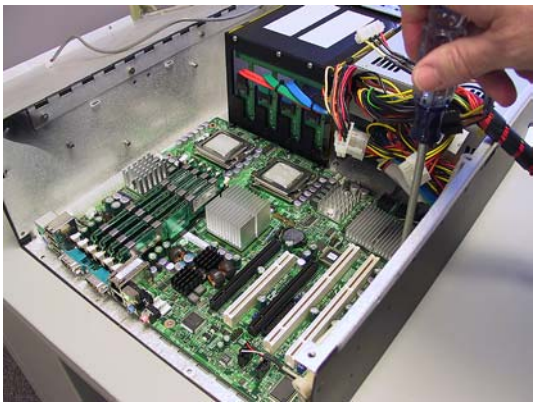


Figure 4-127

22) Now slide the motherboard out and place it on a protected surface as shown in Figures 4-198 and 4-129.

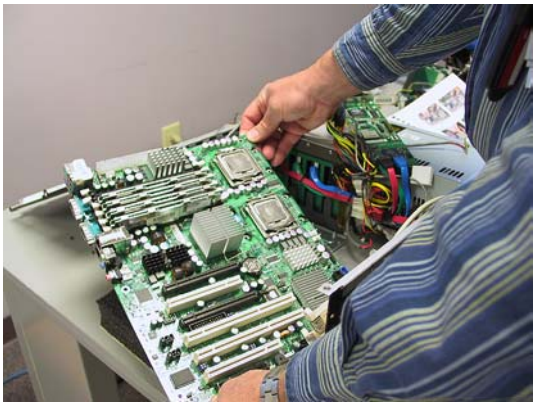


Figure 4-128

Figure 4-129

23) Under the direction of MaxVision support carefully remove the XEON series 5100 CPU from its socket as illustrated in Figures 4-130 through 4-131. Observe the keying of the CPU into its socket.

Figure 4-130

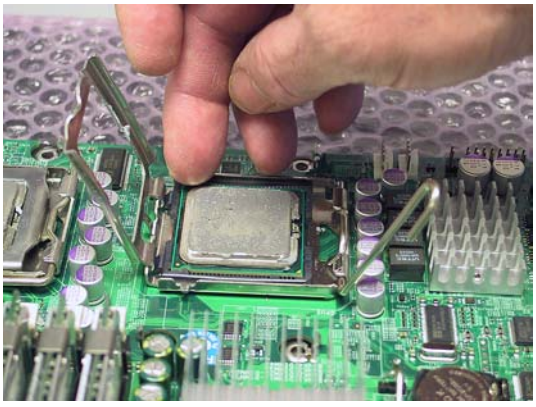


Figure 4-131

24) Under the direction of MaxVision support carefully remove the XEON series 5100 CPU from its socket as illustrated in Figures 5-131 through 5-133. Observe the keying of the CPU into its socket.

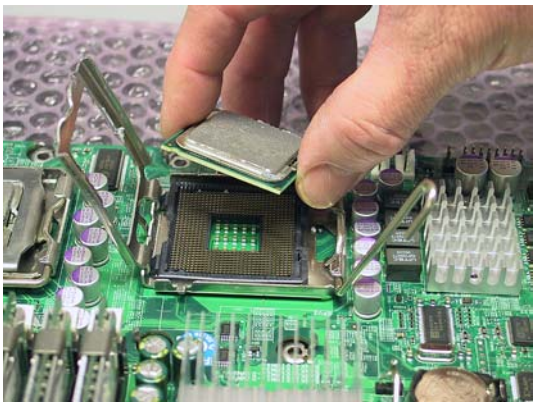


Figure 4-132

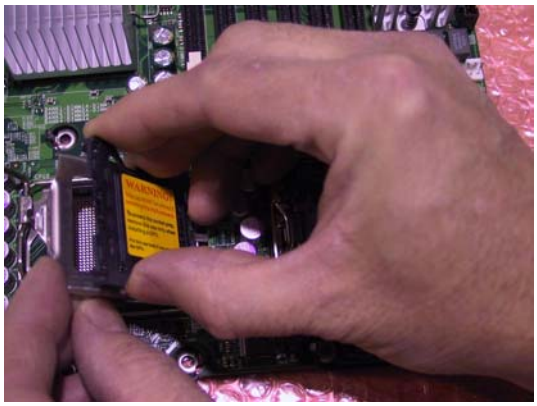


Figure 4-133

25) Gently assemble the XEON CPUs into the replacement motherboard.

Note: EXTREME CARE must be taken not to damage in any way the delicate pins used in the CPU sockets. Once bent, these pins cannot be straightened resulting in the total loss of the motherboard. This type of damage is not covered under the MaxVision Warranty (this motherboard is valued at almost $500). Always remove the protective CPU pin covers from the new motherboard and install them onto the suspect or bad motherboard before any additional handling of the motherboard. The installation of the pin protector is illustrated in Figure 4-133.

Chapter 5: Module Replacement and Upgrade Procedures for Dual/Triple-Screen Systems

Introduction

The instructions in this chapter describe how to replace and upgrade various modules in your MaxPac unit.

Note: Generally speaking, you should only access the MaxPac internals under the direction of MaxVision support. In some cases, performing unauthorized procedures or using components that have not been tested and approved by MaxVision may invalidate your warranty.

Note: Power-down your MaxPac system (shut down Windows® and then turn the hard power switch to its Off position) and then remove the power cable before performing any of the procedures discussed in this chapter. Also please be aware of static discharge when working on your MaxPac. In General, touch the metal part of the chassis to discharge any static prior to handling any delicate electronic parts.

Note: When accessing the system internals and/or performing module upgrade procedures, you are quickly going to end up with a lot of screws and other small items. In order to keep track of things and to prevent misplacing any parts, it is strongly recommended to have a plastic container divided into small compartments and to label these compartments as you work.

Required Tools and Techniques

Most of the module replacement and upgrade procedures discussed in this chapter can be performed using only a pair of #1 (small tip) and #2 (regular tip) Phillips screwdrivers. However, some procedures will require additional tools as discussed in *Appendix C*.

Note: It is extremely important that you use only high-quality tools so as to avoid any slippage and stripping of screw heads and threads. Furthermore, in order to avoid any slippage, it is VERY important to apply adequate force in the form of **firm and steady pressure**. See *Appendix C* for details on the tools required to service the system.

Note: It is highly recommended that you use magnetized screwdrivers so as to prevent screws from dropping inside the case and/or aiding in retrieving them if they do drop inside the case. (If your screwdriver isn't already magnetized, you can make it so by repeatedly "stroking" the blade with a permanent magnet.

Names and Types of Screws

MaxPac X-Class systems use a variety of different screw types. In order to help you follow the instructions in this chapter, details on these screws are provided in *Appendix C*.

Flat Panel Display Module (Left-Hand Screen)

1) Lay the system flat on the table with the displays in the closed position and facing upwards (it is recommended that you lay the system on bubble wrap in order to protect the finish).
2) Use a Phillips #1 screwdriver to remove the six 4-40 3/16" black countersunk screws holding the left-hand screen's monitor cable access panel (Figure 5-1).

Figure 5-1

Figure 5-2

3) Gently lift the left-hand screen's monitor cable access panel away from the system (Figure 5-2).
4) Unscrew the jack screws holding the DVI data cable connector (Figure 5-3) and gently pull this connector away from the display (Figure 5-4).

Figure 5-3

Figure 5-4

5) Press down on the release catch holding the power cable and gently pull this connector away from this display (Figure 5-5).
6) Observe the cable tie attaching the power and data cables to a standoff post mounted to the left of the screen assembly (this cable-tie is shown just to the left of the hand in Figure 5-5). Cut or remove this cable tie as needed.

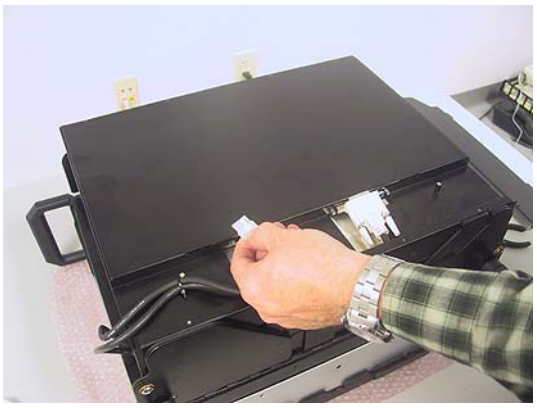


Figure 5-5

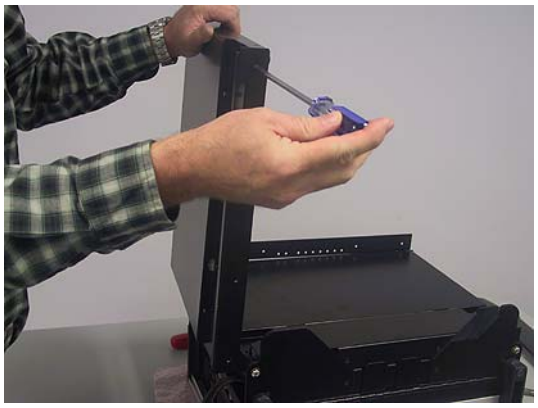


Figure 5-6

7) Open the left-hand screen to a vertical position, use a Phillips #2 screwdriver to remove the eight 6-32 1/4" black countersunk screws – four on each site – holding the screen to its hinge bar (Figure 5-6), and then lift the screen away.

8) Perform the above steps in reverse order to replace the failed screen with the new unit as supplied by MaxVision support.

Flat Panel Display Module (Right-Hand Screen)

1) Lay the system flat on the table with the displays in the closed position and facing upwards (it is recommended that you lay the system on bubble wrap in order to protect the finish). If your MaxPac system has three screens, unfold the left-hand screen as shown in Figure 5-7.

2) Use a Phillips #1 screwdriver to remove the six 4-40 3/16" black countersunk screws holding the right-hand screen's monitor cable access panel (Figure 5-8).

Figure 5-7

Figure 5-8

3) Gently lift the left-hand screen's monitor cable access panel away from the system.

4) Unscrew the jack screws holding the DVI data cable connector and gently pull this connector away from the display (Figure 5-9).

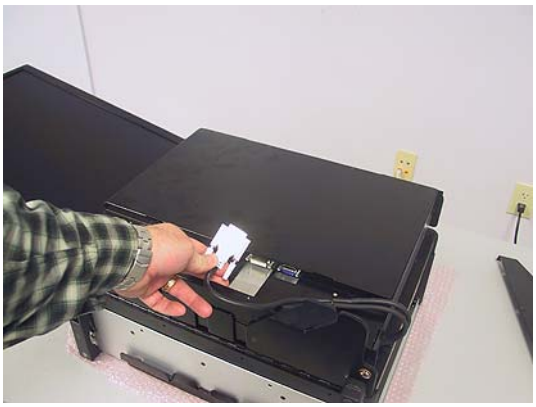


Figure 5-9

Figure 5-10

5) Press down on the release catch holding the power cable and gently pull this connector away from this display (Figure 5-10).

6) Observe the cable tie attaching the power and data cables to a standoff post mounted to the right of the screen assembly. Cut or remove this cable tie as needed (Figure 5-11).

Figure 5-11

Figure 5-12

7) Open the right-hand screen to a vertical position, use a Phillips #2 screwdriver to remove the eight 6-32 1/4" black countersunk screws – four on each site – holding the screen to its hinge bar (similar to the procedure for the left-hand screen as shown in Figure 5-6), and then lift the screen away (Figure 5-12).

8) Perform the above steps in reverse order to replace the failed screen with the new unit as supplied by MaxVision support.

Flat Panel Display Module (Center Screen)

1) Lay the system flat on the table with the displays in the closed position and facing upwards (it is recommended that you lay the system on bubble wrap in order to protect the finish). If your MaxPac system has three screens, unfold the left- and right-hand screens as shown in Figure 5-13 (if your MaxPac system has only two screens, unfold the right-hand screen.)

Figure 5-13

Figure 5-14

2) Use a Phillips #2 screwdriver to remove the eight 6-32 1/4" black countersunk screws – four on each site – holding the screen to the wing brackets, which are in turn attached to the main chassis (Figure 5-14).

3) Lift the center screen into a vertical position standing against the cable-side pair of wing brackets as illustrated in Figures 5-15 and 5-16 (as these monitors are expensive items, it is recommended that you keep hold of the screen when it is in this vertical position).

Figure 5-15

Figure 5-16

4) On the other side of the screen (with regard to Figure 5-16), observe the monitor tilt-stand components lying in/on the main chassis as indicated by the pointing finger in Figure 5-17. It is very important to ensure that these components remain flat and interleaved.

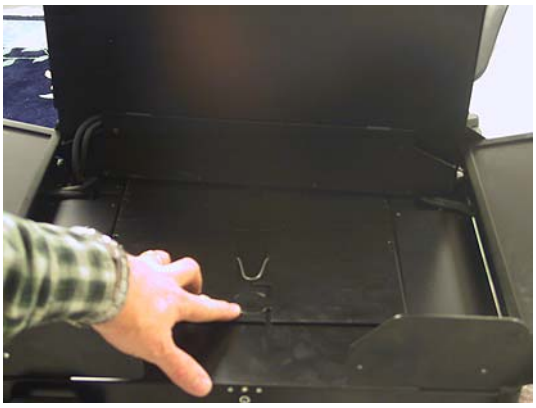


Figure 5-17

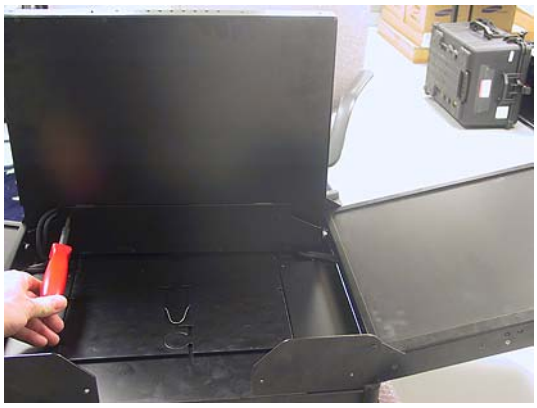


Figure 5-18

5) Use a Phillips #1 screwdriver to remove the six 4-40 3/16" black countersunk screws holding the center screen's monitor cable access panel (Figure 5-18).

6) Gently lift the center screen's monitor cable access panel away from the system (Figure 5-19).

Figure 5-19

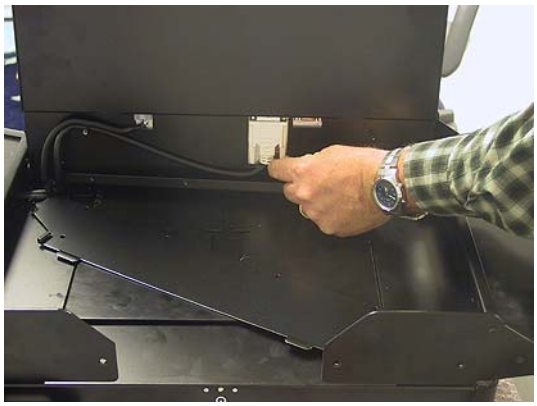


Figure 5-20

7) Unscrew the jack screws holding the DVI data cable connector (Figure 5-20) and gently pull this connector away from the display.

Figure 5-21

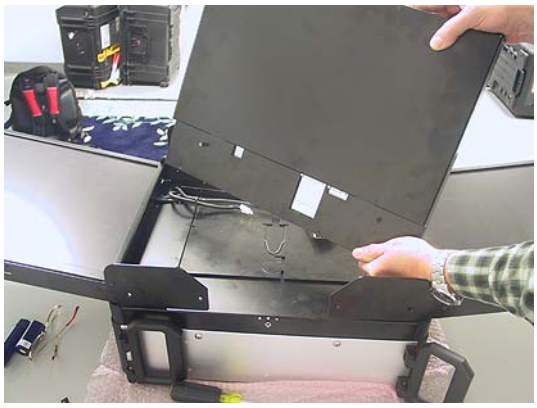


Figure 5-22

8) Press down on the release catch holding the power cable and gently pull this connector away from this display (Figure 5-21).

9) Lift the center screen away from the system (Figure 5-22).

10) Perform the above steps in reverse order to replace the failed screen with the new unit as supplied by MaxVision support.

Note: When replacing the cable access cover for the center screen, observe that the cables exit the screen assembly through the larger upper cable guide as shown in Figure 5-23.

When re-installing the center screen, once the cable access panel has been re-attached, any excess cable must be pushed down into the main chassis.

Figure 5-23

By comparison, in the case of the left- and right-hand screens, the cables exit as shown in Figures 5-24 and 5-25, respectively (observe that the cable service lengths for the left- and right-hand screens are dictated by the cable ties as discussed in the previous sections).

Figure 5-24

Figure 5-25

Opening the Display Assembly into its Service Position

In order to replace and/or upgrade modules inside the MaxPac system, it is necessary to open the display assembly into its service position as discussed below.

1) Lay the system flat on the table on top of a piece of firm, non-abrasive foam (or similar material) capable of supporting the system's weight as shown in Figure 5-26. Observe that the displays should be in the closed position and facing upwards.

Figure 5-26

Figure 5-27

2) Use a Phillips #2 screwdriver to remove the two 10-32 1/4" black countersunk screws – one on each site (on the top-side of the system close to the handles) – holding the screen assembly to the chassis (Figure 5-27).

3) Use a Phillips #2 screwdriver to remove the two 10-32 silver truss head screws on the top of the system (Figure 5-28).

Figure 5-28

Figure 5-29

4) Press the feet down into their fully "tilted" position as shown in Figure 5-29 (this is necessary to allow the display assembly to fully hinge up).

5) Walk around to the other side of the system (so you are facing the bottom of the system) and lift the screen assembly as shown in Figure 5-30.

6) Squeeze the integrated support stands together as illustrated in Figure 5-30.

Figure 5-30

Figure 5-31

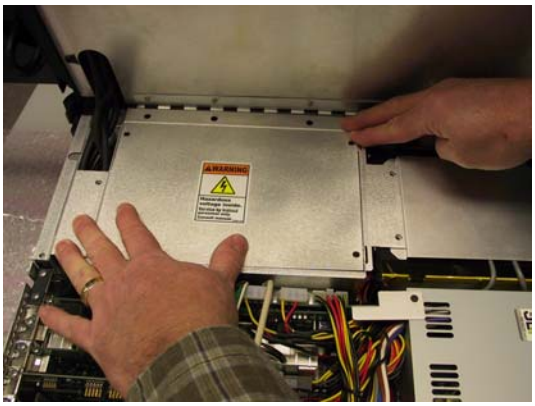
7) Pull the support stands down to their maximum extended (service) position as illustrated in Figure 5-31 (ensure that, when you release the supports, their spring mechanism expands them back into their locked position).

8) Return to facing the top of the system and use a Phillips #2 screwdriver to remove the five 6-32 1/4" black countersunk screws – three on the top and one on each site – holding the inner chassis cover (Figure 5-32).

Figure 5-32

Figure 5-33

9) Observe that the inner chassis cover is hinged. Gently raise the inner chassis cover to its vertical position leaning back against the display assembly (Figure 5-33).



Note: Your MaxPac8230 may contain the optional UPS Power Management System. In this case the inside of the inner chassis will look similar to the above photo. Please refer to Chapter 6 for details of the installation and removal of the UPS System. The UPS System must be removed to gain access to the memory and CPUs.

Memory

Note: Due to the fact that high-end computer systems can experience a host of memory compatibility issues and problems, you should only use replacement and/or additional memory sticks supplied by MaxVision.

Note: The MaxPac 8230 uses a Fully Buffered DDR2 memory (FB-DIMM or FBD). Specifically the MaxPac 8230 uses FBD DDR2 667MHz. What separates FBD from regular DDR2 is a chip on each module called the AMB (Advanced Memory Buffer), which buffers all data/address/command requests to the DRAM devices. This buffering allows up to 12GB of memory to be installed in the MaxPac 8230. FB-DIMMs REQUIRE that memory sticks be used in pairs, with each pair having the same size/capacity/speed. Population of the first pair of FBD occupies the first and second DIMM slots (labeled DIMM1A and DIMM1B on the motherboard). Population of the second pair of FBD occupies the third and fourth DIMM slots (labeled DIMM2A and DIMM2B).

Note: In the event that you begin to experience problems with the memory that is already resident in your MaxPac, you must first determine which stick has failed under the direction of MaxVision support.

Note: The BIOS will always report the true amount of physical memory that is present in the system. This may be as much as 12 GB. However, the actual amount of memory that can be seen by the system is determined by the main operating system (OS). With regard to the 32-bit Windows® XP Professional operating system, for example, in the case of a MaxPac 8230 XRA2 (dual-screen) configuration, the maximum amount of memory reported in the **System Information** dialog is 3 GB; by comparison, in the case of a MaxPac 8230 XRA3 (triple-screen) configuration, the maximum amount of memory reported in the system information dialog is 2 GB. (Further note that even when the OS reports 3 GB for the dual-screen configuration, the maximum amount of shared user space is actually only 2 GB.) However, with regard to the 64-bit Windows XP Professional x64 Edition of the operating system, the **System Information** dialog will accurately report the true amount of physical memory (which can theoretically be up to 128 GB) and all of this memory will be available to the applications.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) In order to remove and replace a memory stick, gently press down-and-out on the two plastic “rabbit-ears” at either side of the stick which will cause it to pop out, and then remove the stick from the system (Figure 5-34).

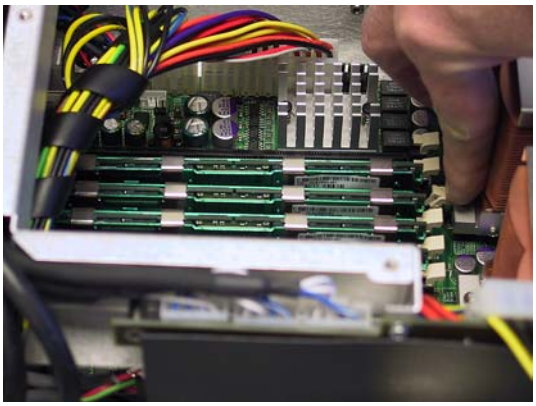


Figure 5-34

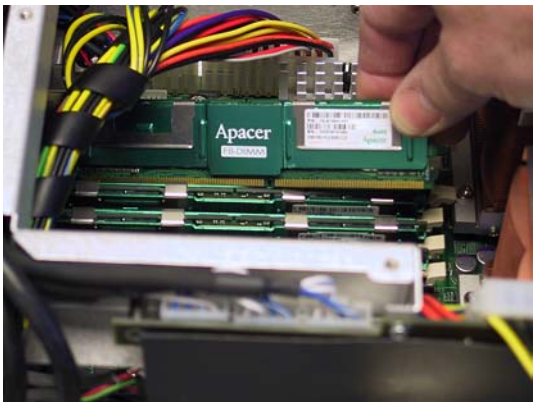


Figure 5-35

3) Observe that the memory sticks are keyed such that they can only be inserted one way. Take the new (replacement) memory stick sent to you by MaxVision support and gently press it down into the original slot on the motherboard.

4) Return the system to its initial condition by reversing the order of the operations discussed at the beginning of this section.

PCI Cards (General)

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) If you are replacing an existing PCI card, use a Phillips #2 screwdriver to remove the 6-32 screw attaching the card’s retaining bracket to the inner chassis as shown in Figure 5-36. (If you are adding a new card, remove the corresponding blanking plate screw.)

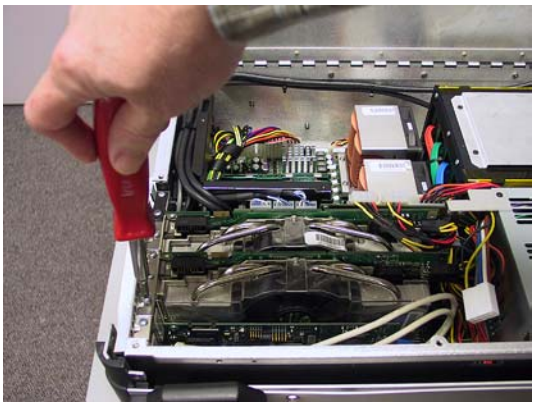


Figure 5-36

Figure 5-37

3) Gently pull out the old card as shown in Figure 5-37.

4) This particular example features a SATA RAID controller card. In this case, you also need to disconnect the data cables from the card as shown in Figure 5-38 (see notes below).

Figure 5-38

5) Take the new/replacement PCI card and incorporate it into the system by performing the steps described above in reverse order.

Note: It is important to ensure that theses cables are attached to the new card in the same positions as they occupied on the original card.

Note: In the case of these SATA cables, there is no good locking mechanism to ensure that they remain attached to the card, so MaxVision uses a special adhesive. This adhesive is somewhat flexible and the connectors can be broken free of the bond by simply pulling the SATA connector straight out (do not pull on SATA cable itself). Reapply adhesive (provided by MaxVision support) after reattaching the cables to the new card.

Note: Ensure that the tongue on the new/replacement card's faceplate lines up with the slot in the chassis (you may have to bend the tongue slightly in the case of a new card).

PCI Express Card (Secondary card for third screen and Projector Port)

In the case of a dual-screen MaxPac system, the graphics for both screens will be handled by a single PCI Express card discussed in the following section. By comparison, in the case of a triple-screen system, the center and right-hand screens will be driven by the Primary PCI Express card, while the left-hand screen will be driven by a second PCI Express graphics card. The unused port of this card can also be used as a projector port. This topic discusses the replacement of the secondary PCI Express graphics card.

1) Open the display assembly into its service position as discussed earlier in this chapter. Use a Phillips #1 screwdriver to remove the screws holding the over-molded DVI video connector to the PCI Express graphics card (Figure 5-39).

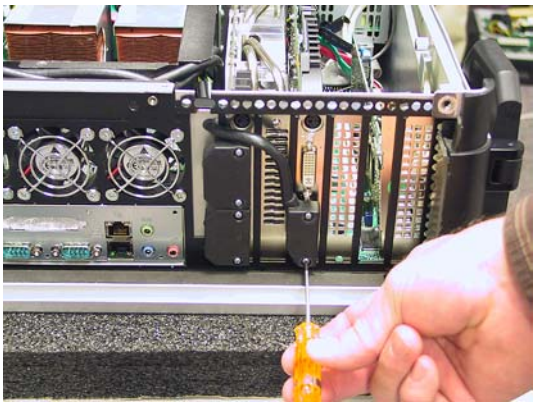


Figure 5-39

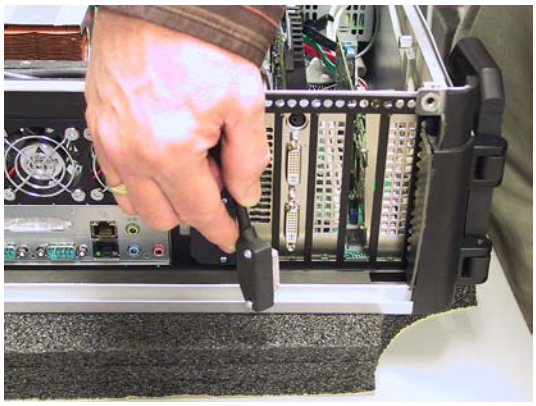


Figure 5-40

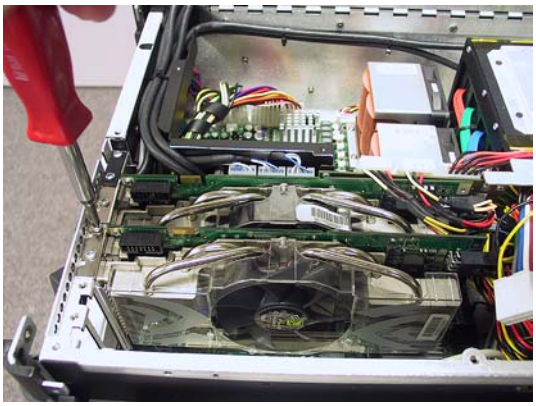


Figure 5-41

Figure 5-42

2) Gently disengage the over-molded DVI connector from the PCI Express graphics board (Figure 5-40).

3) Use a Phillips #2 screwdriver to remove the 6-32 screw attaching the card's retaining bracket to the inner chassis (Figure 5-41).

4) Some PCI Express cards may have an auxiliary power connector. If so, disconnect it as shown in Figure 5-42.

5) Gently pull the old card out.

6) Take the new/replacement PCI Express card and incorporate it into the system by performing the steps described above in reverse order.

Note: Ensure that the tongue on the new/replacement card's faceplate lines up with the slot in the chassis (you may have to bend the tongue slightly in the case of a new card). In this system there is no plastic latch holding the rear of the PCI Express card. The foam attached to the hinged inner lid of the MaxPac will hold pressure to the back of the card when properly secured.

PCI Express Card (Primary)

In the case of a dual-screen MaxPac system, the graphics for both screens will be handled by the Primary PCI Express card. By comparison, in the case of a triple-screen system, the center and right-hand screens will be driven by the PCI Express card, while the left-hand screen will be driven by a secondary PCI Express graphics card. This topic discusses the replacement of the Primary PCI Express card.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) Use a Phillips #1 screwdriver to remove the screws holding the over-molded video cables to the PCI Express graphics card. Gently disengage the over-molded DVI connector from the PCI Express graphics board (Figures 5-43 and 5-44). Removing the bottom DVI connector will expose a screw securing the bottom of the DVI cable bracket. Remove this screw with a #1 Phillips screwdriver.

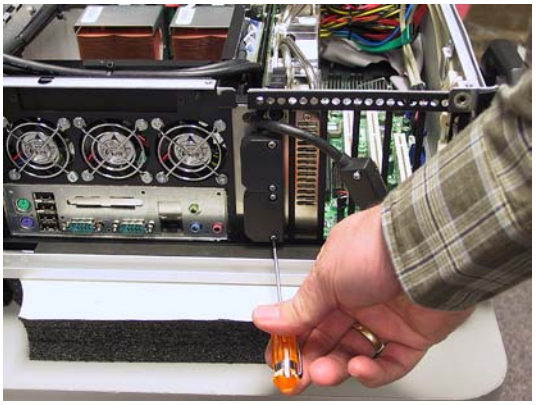


Figure 5-43

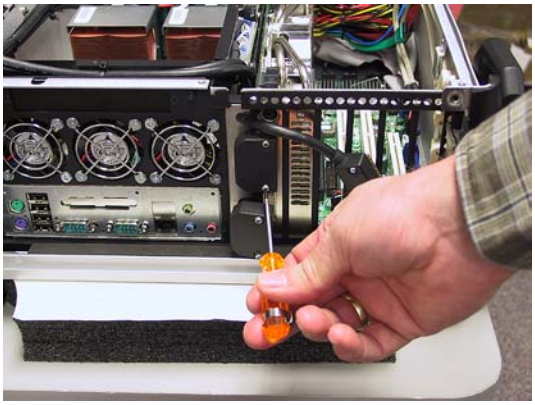


Figure 5-44

Figure 5-45

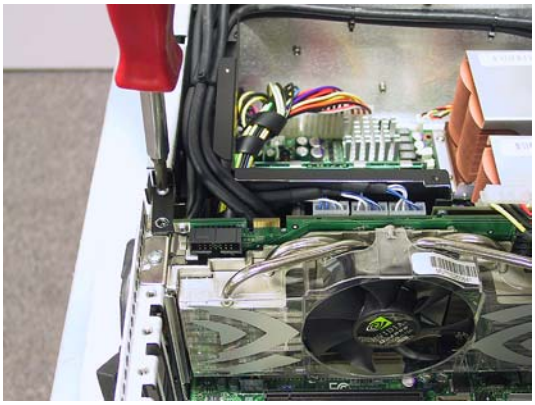


Figure 5-46

3) Use a Phillips #2 screwdriver to remove the two 6-32 screws attaching the card's retaining bracket – and the special linking bracket – to the inner chassis (Figure 5-45 and 5-46).

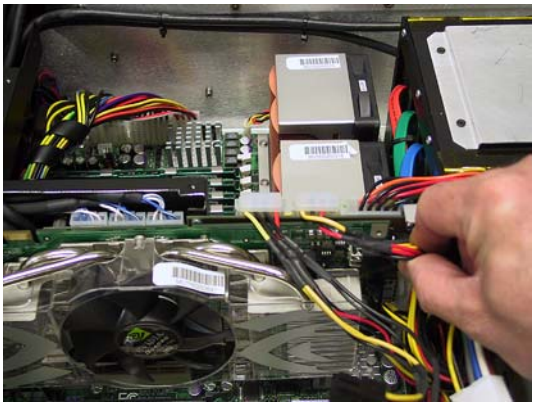


Figure 5-47

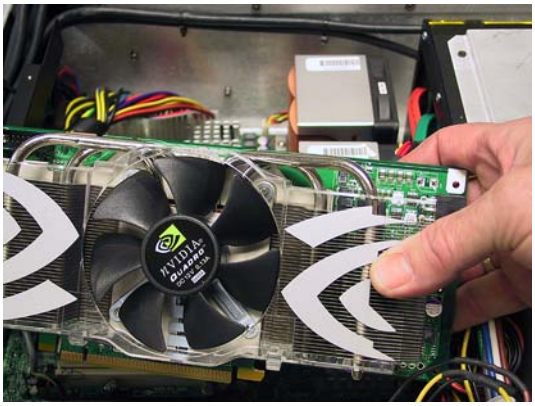


Figure 5-48

4) Gently remove the special linking bracket and store it somewhere safe.

5) Some PCI Express cards may have an auxiliary power connector. If so, disconnect it as shown in Figure 5-47.

6) Take the new PCI Express card and incorporate it into the system by performing the steps described above in reverse order.

Note: Ensure that the tongue on the new/replacement card's faceplate lines up with the slot in the chassis (you may have to bend the tongue slightly in the case of a new card).

Note: When removing the video cables keep track of the order of the connections to the PCI Express card. The right-hand display is connected to the top connector and the center display is connected to the bottom connector of the PCI Express card. In the case of a triple-display system, the left display connector (which is a different shape to the other two) is attached to the bottom DVII connector of the secondary PCI Express graphics board.

Note: In this system there is no plastic latch holding the rear of the PCI Express card. The foam attached to the hinged inner lid of the MaxPac will hold pressure to the back of the card when properly secured

Power Distribution Assembly

Note that the following procedure may be facilitated by first removing the PCI and PCI Express cards as discussed earlier in that chapter; however, removing these cards is not obligatory.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) Unplug the top power input connector from the power distribution board (Figure 5-49).

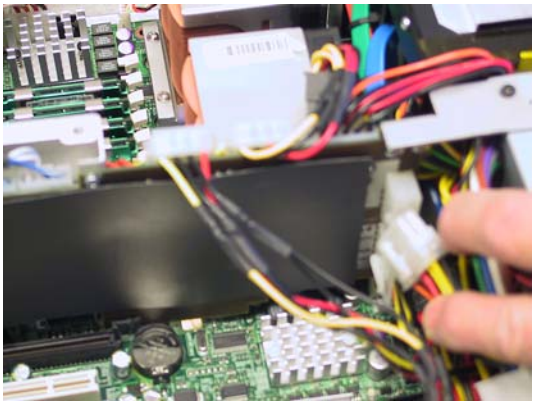


Figure 5-49

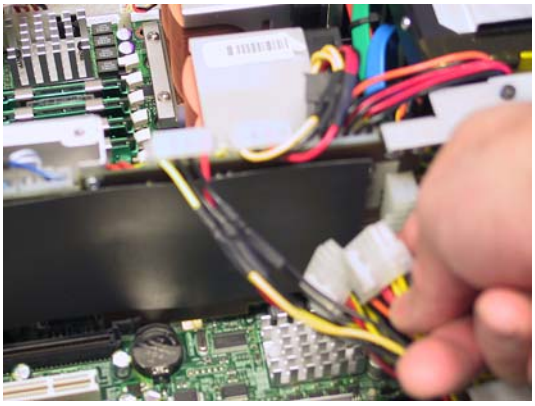


Figure 5-50

3) Unplug the bottom power input connector from the power distribution board (Figure 5-50).

Figure 5-51

Figure 5-52

4) Unplug the CD/DVD power output connector from the power distribution board (Figure 5-51).

5) Use an Allen key/tool to remove the screw attaching the power distribution assembly to the power supply unit (Figure 5-52).

Figure 5-53

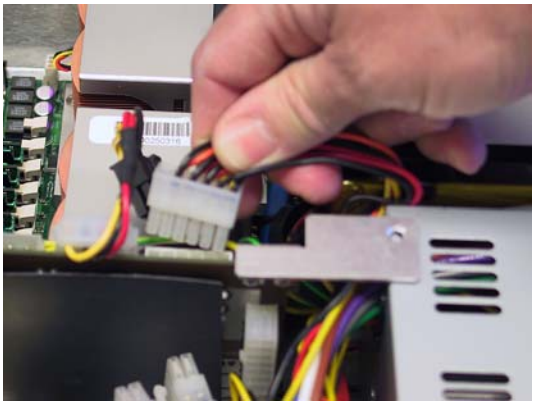


Figure 5-54

6) Use a Phillips #1 screwdriver to remove the two 4-40 screws attaching the power distribution assembly to the side of the inner chassis (Figures 5-53).

7) Gently remove the input power connector to the power distribution board (note the latch on the back side of the connector) as shown in Figure 5-54

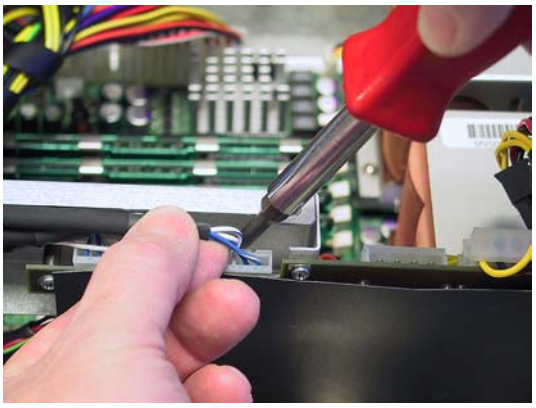


Figure 5-55

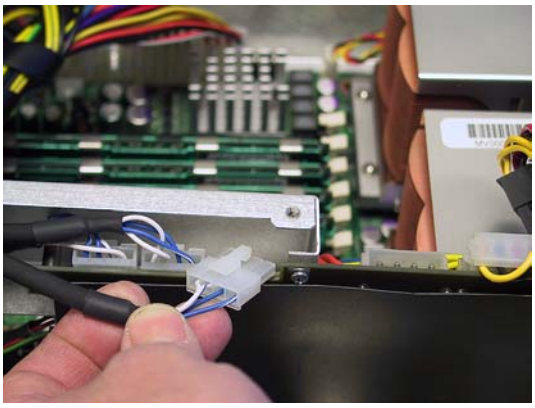


Figure 5-56

8) Gently remove the display power cables from the power distribution board. There will be 1, 2 or 3 of these power cables depending on the number of displays (Figures 5-55, 5-56 and 5-57). Note that, although the cables may be of different lengths, each of the display power connections are wired in parallel so the order is not very important. Cut all cable ties holding cables to the aluminum cable guide bracket.

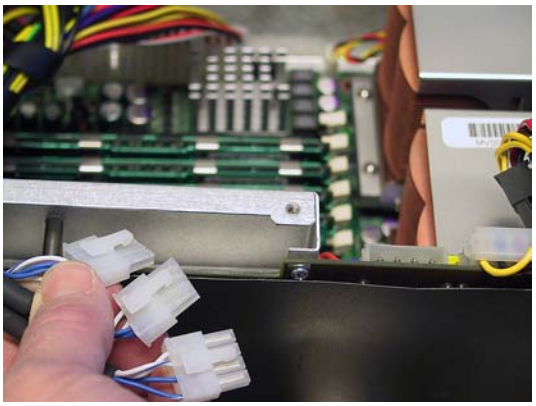


Figure 5-57

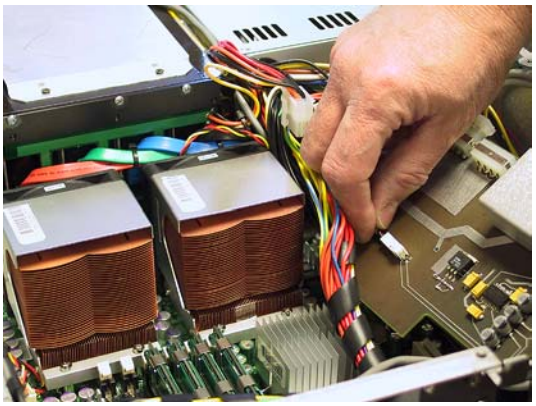


Figure 5-58

9) Disconnect the right speaker cable from the power distribution board as illustrated in Figures 5-58 and 5-59.

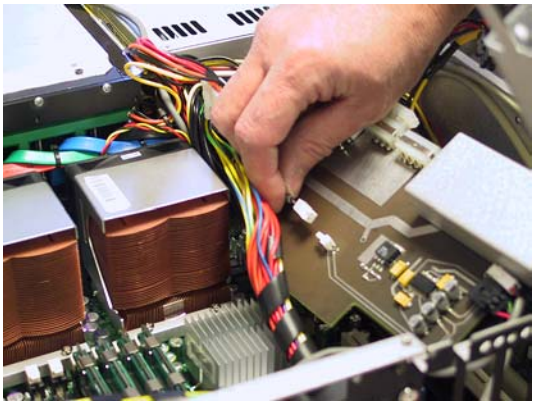


Figure 5-59

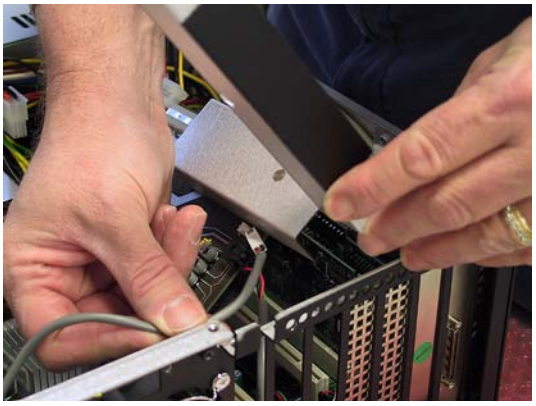


Figure 5-60

10) Disconnect the audio input cable from the power distribution board as illustrated in Figures 5-60. This connector is black and has a latch. Note that the audio amplifier is also on the power distribution board.

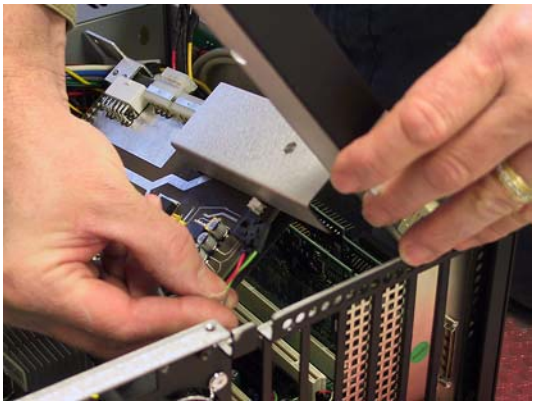


Figure 5-61

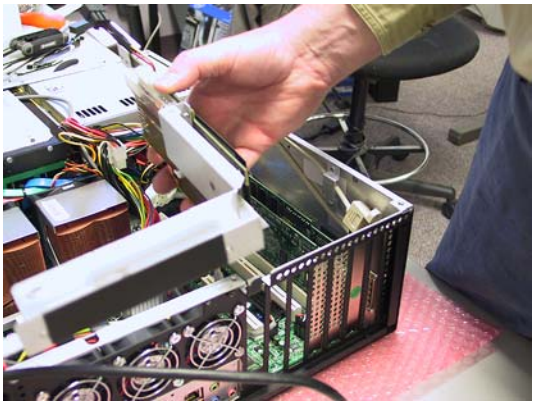


Figure 5-62

11) Disconnect the left speaker cable from the power distribution board as illustrated in Figures 5-61.

12) Gently lift the power distribution assembly up and away from the inner chassis (Figure 5-62).

13) Take the new power distribution assembly supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Hard Drive Magazine (also Individual Hard Drives)

1) Undo the knurled screw holding the middle binding bar (Figure 5-63) and then remove the binding bar (Figure 5-64).

Figure 5-63

Figure 5-64

2) Gently pull on the magazine handle to extract the magazine from the inner chassis (Figure 5-65).

Figure 5-65

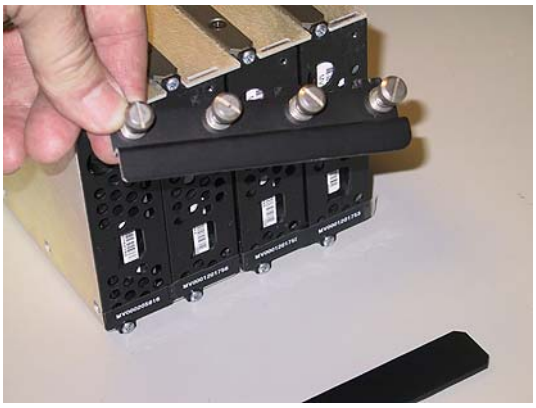


Figure 5-66

3) In order to replace an individual drive, turn each of the four knurled screws attached to the upper binding bar until they pop out and then remove the upper binding bar (Figure 5-66). Note that the upper binding bar has tabs that are inserted into slots of the main drive cage.

Figure 5-67

4) Gently grasp the drive in question and pull it out of the magazine (Figure 5-67).

Note: These disks are hot-swappable, so you can replace individual drives while the magazine remains resident in the system. When the upper binding bar is removed the 4 slots in the main drive cage may slide back. Make sure that when replacing the upper binding bar that the tabs go into these slots.

Note: In order to easily identify these disks, MaxVision serial numbers are affixed to the bottom edge (the small white strips shown toward the bottom of the drives in Figure 5-67). Recording the positions and serial numbers of your disks for each MaxPac is advisable.

Optical Drive (CD/DVD)

1) Note that it is not necessary to open the display assembly into its service position in order to perform this procedure.
2) Undo the two knurled attaching the CD/DVD drive to the outside of the system's main chassis (Figure 5-68).

Figure 5-68

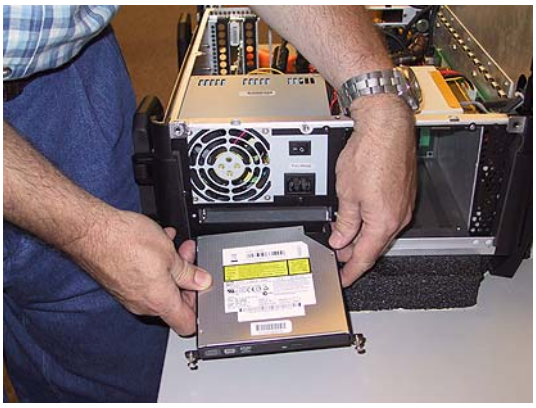


Figure 5-69

3) Gently remove the CD/DVD drive from the system (Figure 5-69).
4) Take the new CD/DVD assembly as supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Optical Drive (CD/DVD) Backplane

Note: The CD/DVD backplane cannot be easily replaced without first removing the main Power Supply Unit (PSU). In the rare case that support advises that the CD/DVD backplane needs replacing refer to the section on the PSU later in this chapter and then return to this section..

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Remove the CD/DVD drive as discussed in the previous topic.
3) Remove the ATA cable (observing where the red stripe is for future reference) as illustrated in Figure 5-70.

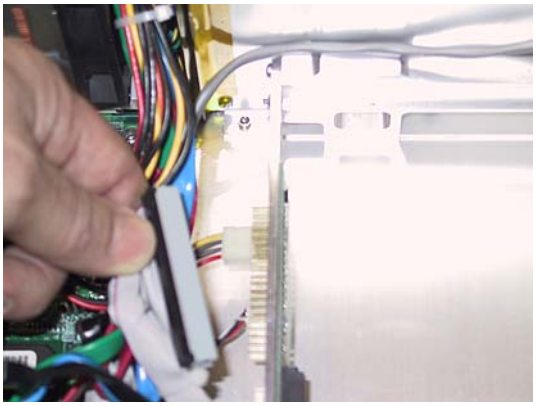


Figure 5-70

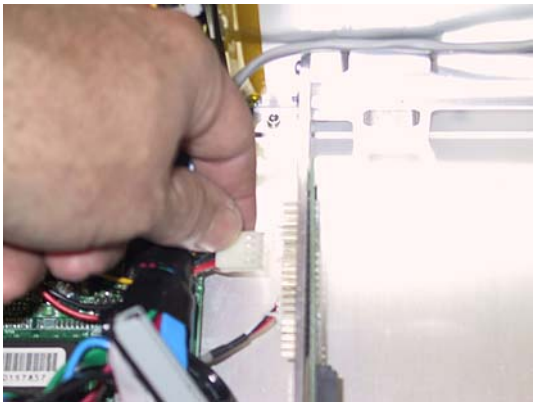


Figure 5-71

4) Remove the main power connector as illustrated in Figure 5-71 (release the latch with your finger or thumb nail while pulling ion the cable).

Figure 5-72

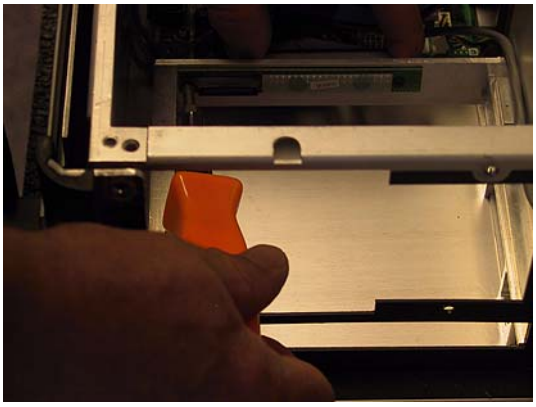


Figure 5-73

5) Remove the CD/Audio cable as illustrated in Figure 5-72.
6) Use a Philips #1 screwdriver to remove the two screws attaching the CD/DVD backplane to the main chassis as illustrated in Figure 5-73
7) Gently remove the CD/DVD backplane as illustrated in Figure 5-74.
8) Present the replacement CD/DVD backplane supplied by MaxVision support to the inner chassis and perform the steps described above in reverse order.

Note: If the replacement CD/DVD backplane does not come equipped with a protective (insulating) Mylar cover, remove this piece from your original backplane and reattach it to the new backplane.

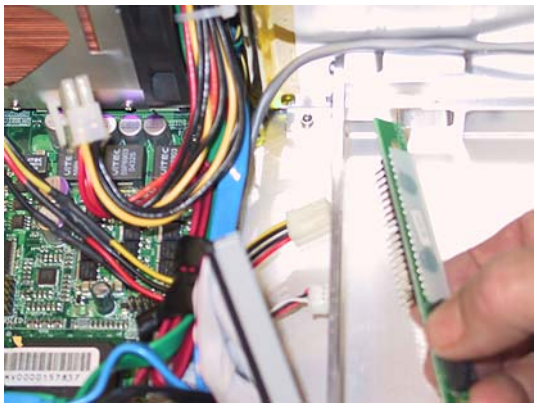


Figure 5-74

External Cooling Fan Assembly

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Disconnect the external cooling fan assembly's power supply cable from motherboard. Simply pull it away using your fingers as shown in Figures 5-75 and 5-76.

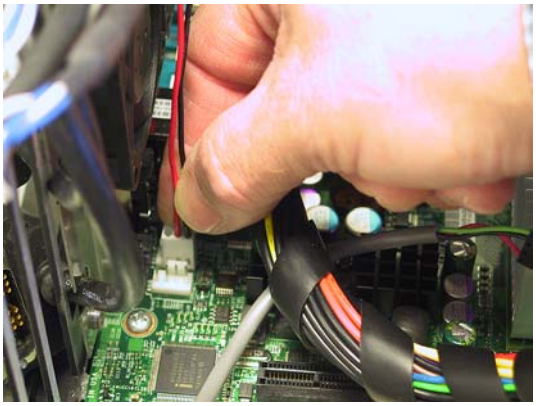


Figure 5-75

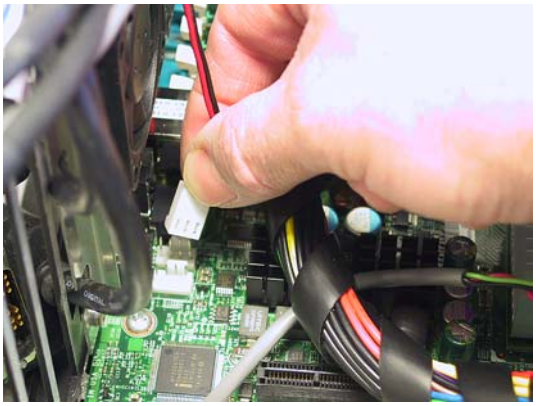


Figure 5-76

3) All three fans must be treated as a single assembly, so remove the twelve self-tapping Plastite screws (4 per fan) attaching the fans to the internal chassis (Figure 5-77) and then gently lift the fan assembly away from the inner chassis (Figure 5-78).
4) Present the replacement fan assembly supplied by MaxVision support to the inner chassis and perform the steps described above in reverse order.

Note that the fan guards are secured to the outside of the chassis by the Plastite screws. When the new fan assembly is replaced make sure the fan guards are replaced.

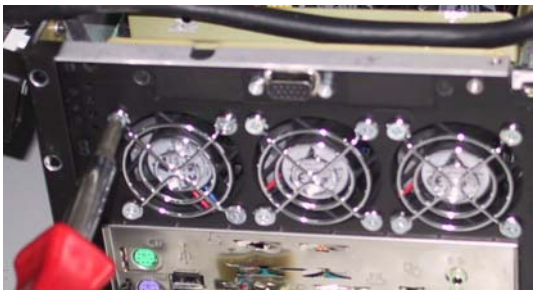


Figure 5-77

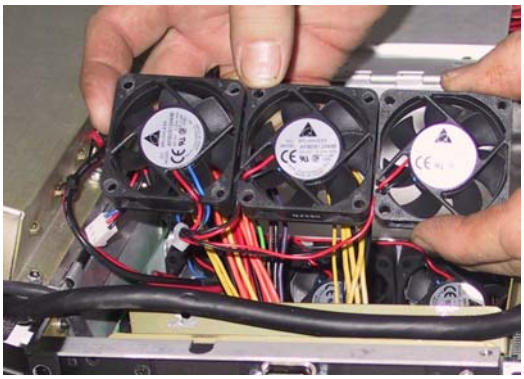


Figure 5-78

CPU Cooling Fans

Note: The photos in this section assume the Power Distribution Assembly has been previously removed. These photos more clearly illustrate the replacement of the CPU Cooling Fans but they can be replaced with the Power Distribution Assembly installed as well.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) There are two screws on either side of the cooling fan assembly. Use a Phillips #2 screwdriver to loosen these captured screws (Figures 5-79 and 5-80).

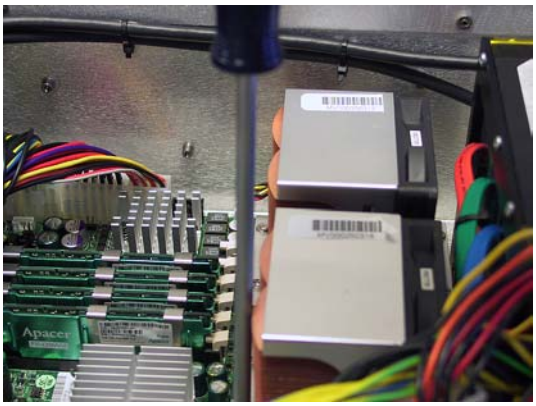


Figure 5-79

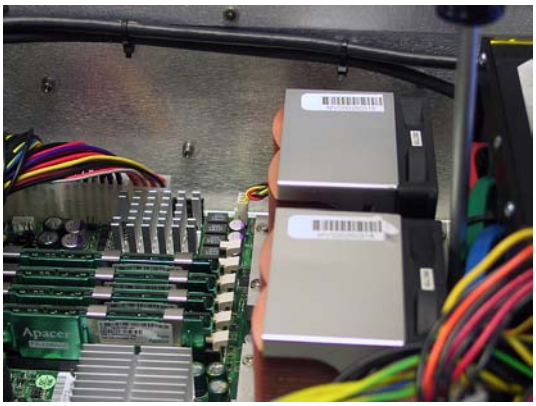


Figure 5-80

3) Gently lift the cooling fan assembly away from the chassis as illustrated in Figure 5-81.

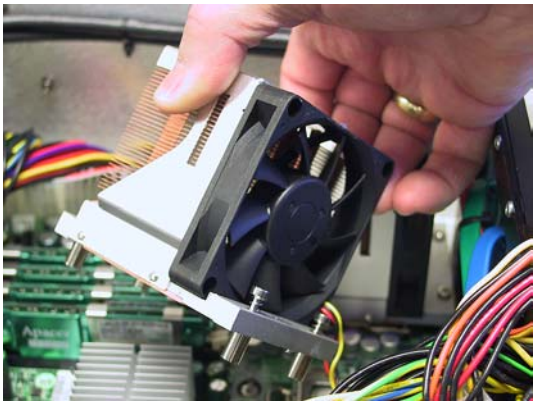


Figure 5-81

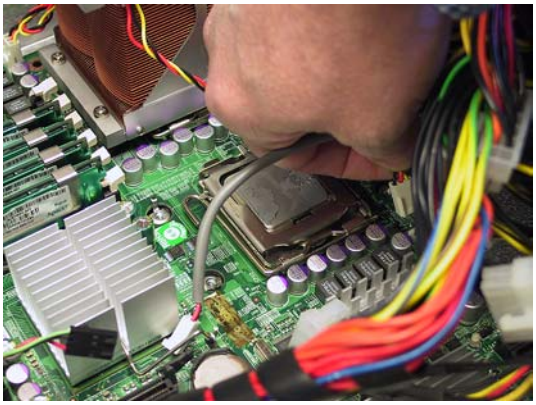


Figure 5-82

4) Each fan has its own power connector that is attached to the main motherboard. Disconnect the power connector associated with the failed fan (Figure 5-82).

5) Figures 5-83 and 5-84 illustrate the removal of the second CPU Fan Assembly.

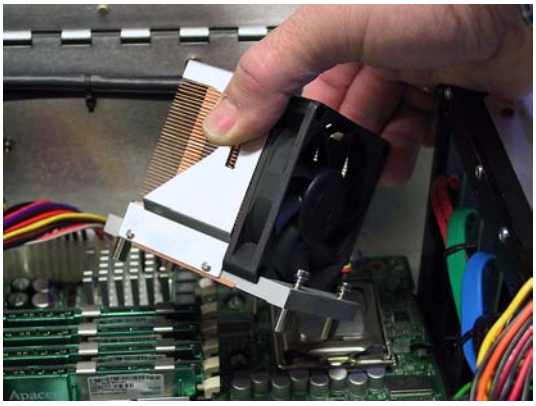


Figure 5-83

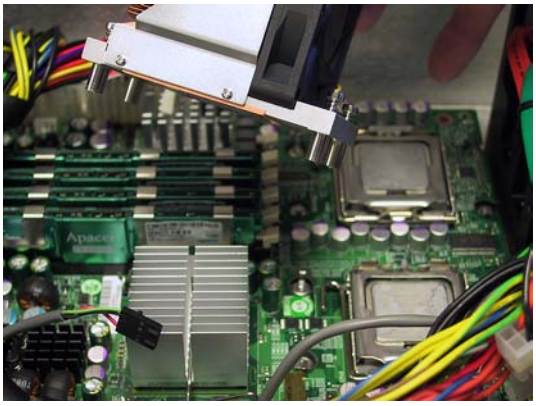


Figure 5-84

6) Present the replacement fan assembly supplied by MaxVision support to the CPU and perform the steps described above in reverse order. Ensure the fan assembly in screwed in with equal pressure on all side and the fan power connector is replaced prior to powering up the system to avoid CPU damage.

Main Power Supply Unit (PSU)

Depending on the problem you are experiencing – and as directed by MaxVision support – you may need to replace the entire power supply as discussed below.

1) Open the display assembly into its service position as discussed earlier in this chapter.

2) Remove the video distribution board as discussed earlier in this chapter.

3) Disconnect the EPS12V 8-pin (4 x 2) power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the interior of the chassis) into the body of the connector (Figures 5-85 and 5-86).

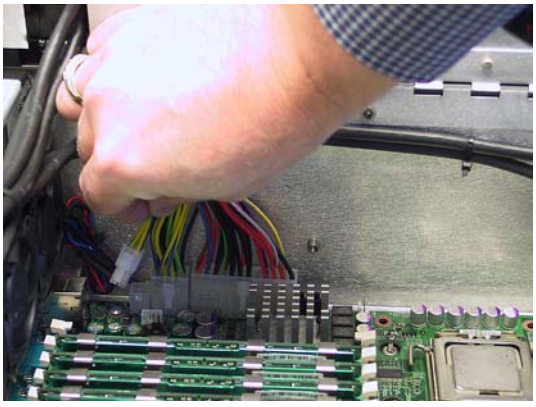


Figure 5-85

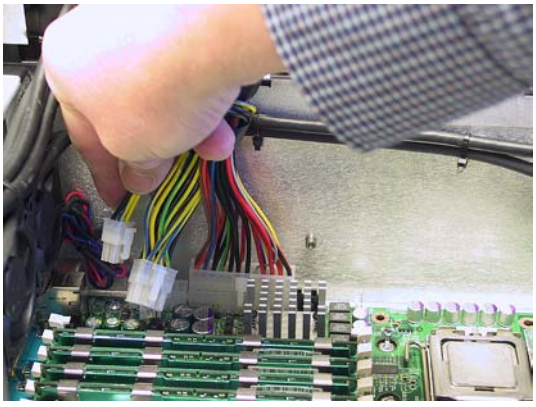


Figure 5-86

4) Disconnect the ATX 24-pin power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the bottom of the chassis) into the body of the connector (Figures 5-87 and 5-88).

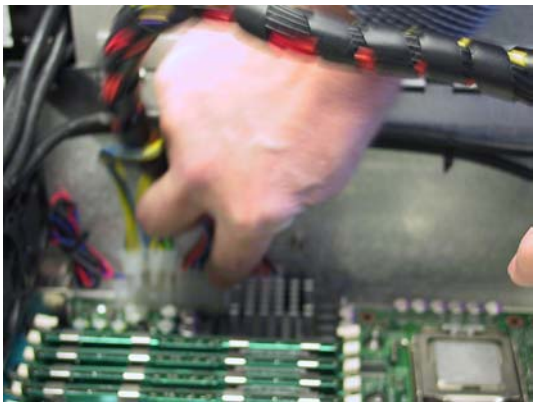


Figure 5-87

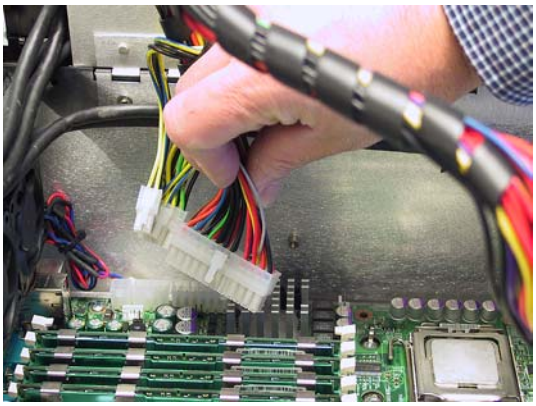


Figure 5-88

5) Use a Phillips #2 screwdriver to remove the four screws attaching the power supply unit to the side of the inner chassis (Figures 5-89 through 5-92).

Figure 5-89

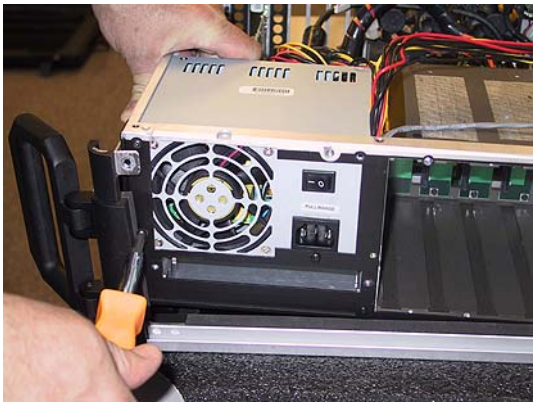


Figure 5-90

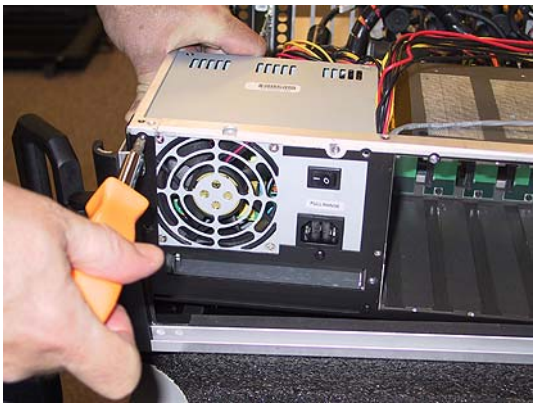


Figure 5-91

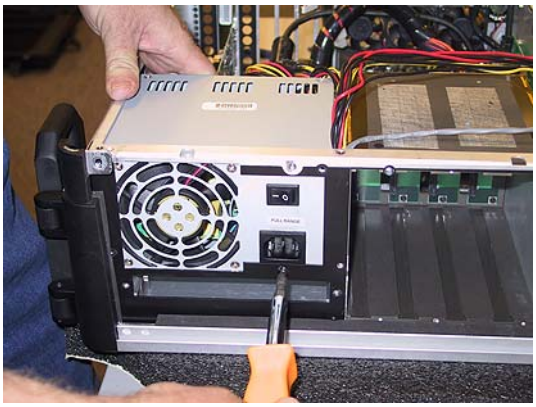


Figure 5-92

Note: Observe the way in which the inner chassis is lifted in Figures 5-90 and 5-91 so as to facilitate access to two of these screws.

6) Gently lift the power supply out of the system as illustrated in Figure 5-93.

Figure 5-93

7) Take the new main power supply unit supplied by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Motherboard

Replacing the motherboard is non-trivial. It is easy to damage the motherboard unless one has the appropriate tools and training. For this reason, you must either return the MaxPac system to MaxVision or be factory trained by MaxVision personnel (see *Appendix D* for more details about contacting MaxVision support and returning your MaxPac to MaxVision).

Note: Certain components can be replaced without removing the inner chassis from the outer chassis. Some of these components include memory, main power supply, PCI and PCI Express boards. While it is fairly easy to remove the inner chassis for the Single-Display XRA1 it is more difficult for the Dual/Triple-Display XRA2/3. Some photos will include the outer chassis while others will not.

1) Open the display assembly into its service position as discussed earlier in this chapter.
2) Remove any PCI and PCI Express cards as discussed earlier in this chapter.
3) Remove the Power Distribution Board as detailed earlier in this chapter.
4) In order to replace the motherboard, you must first remove the inner chassis. In order to do this, the display power cables, display data cables and soft power cable must be disconnected.

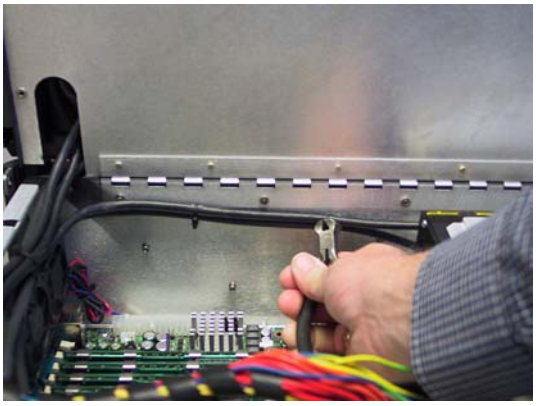


Figure 5-96

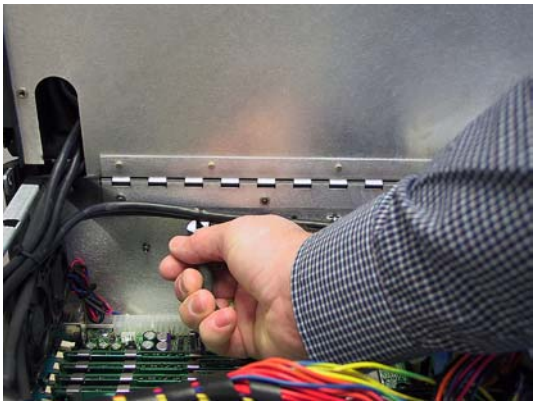


Figure 5-97

Figure 5-98

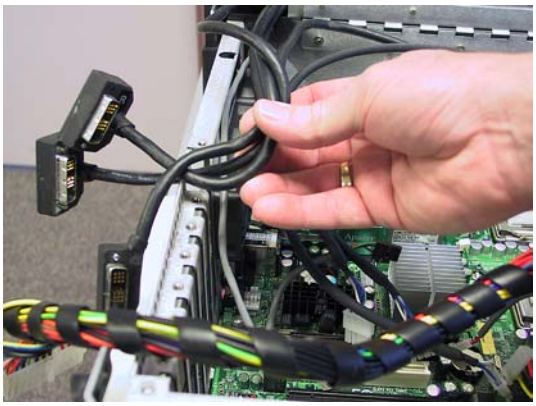


Figure 5-99

5) Cut any cable ties that are holding the display power and data cables in place as shown in figures 5-96 through 5-98

6) Remove the 3 video data cables for the slot leading to the exterior of the left side of the chassis. The triple-screen MaxPac 8230 XRA3 is shown in figure 5-99

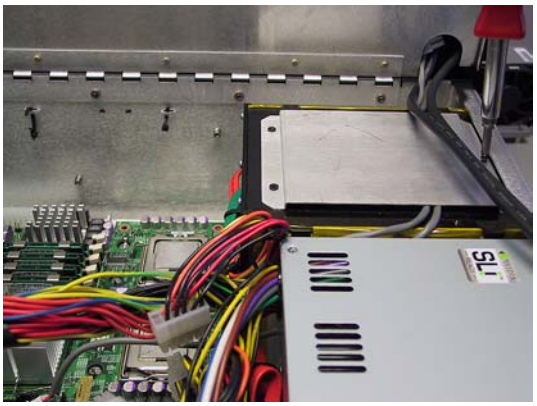


Figure 5-100

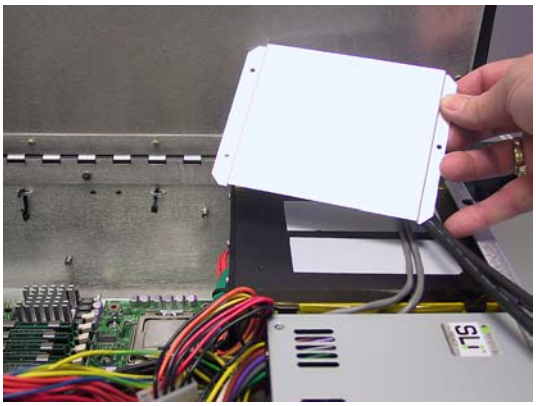


Figure 5-101

7) Use a Phillips #1 screwdriver to remove the three 4-40 screws holding the wire harness protector plate (Figure 5-100), then gently remove the protector plate to expose the soft power and right speaker cables (Figure 5-101).

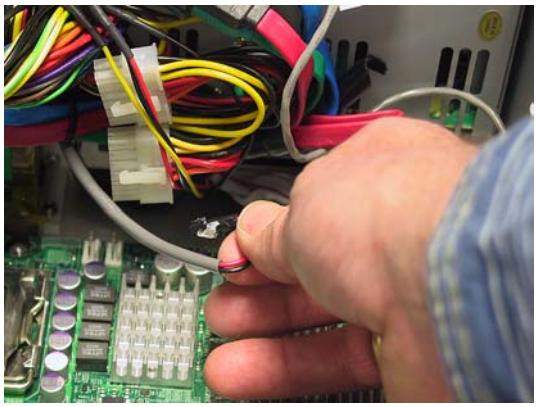


Figure 5-102

8) The soft power cable must be removed from the motherboard connection posts (the location of this connector is pointed out in Figure 5-102). Observe that this cable connector is attached to the motherboard with a flexible adhesive (such as Marine Goop). Simply pull the connector (not the wire) until the adhesive gives.

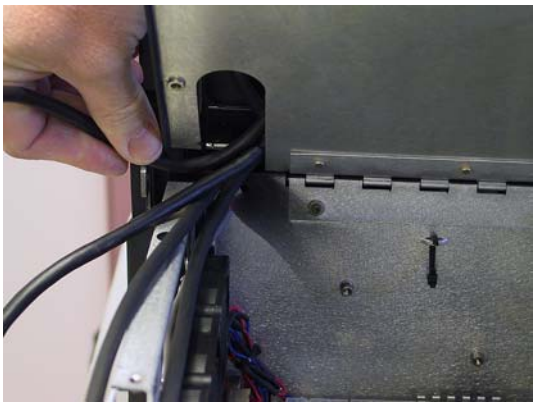


Figure 5-103

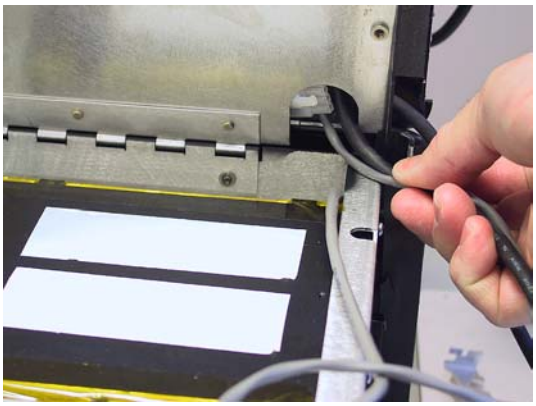


Figure 5-104

9) The center and left monitor power and video cables must be removed from the inner chassis cover cable channel as show in Figure 5-103.

10) The power and video cables for the right monitor (and also and the soft power cable) must be removed from the inner chassis cover cable channel as shown in Figure 5-104.

Figure 5-105

Figure 5-106

11) You will need a second person to hold the monitor assembly while you lift the inner chassis out of the outer chassis Figure 5-105.

Note: As the weight of the inner chassis is removed, the display assembly and outer chassis will topple over if not being held securely

12) Next, the display assembly should be rotated down as illustrated in Figure 5-106.

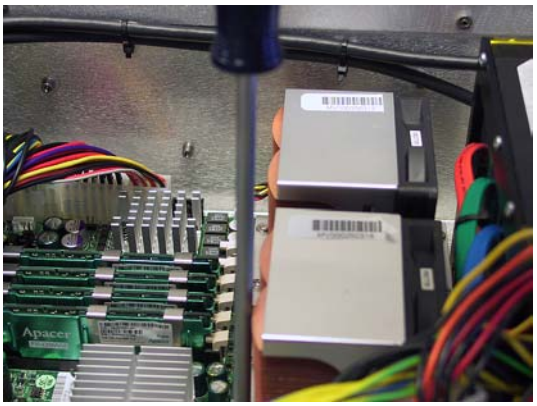


Figure 5-107

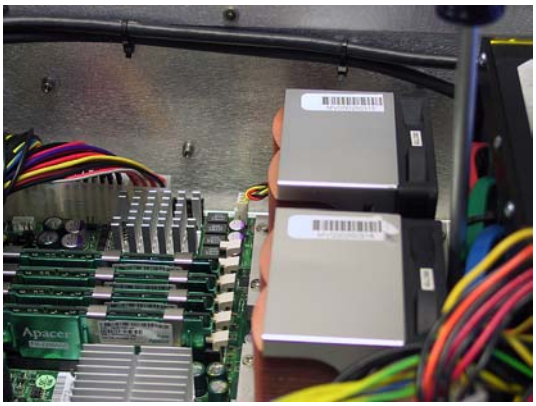


Figure 5-108

13) Now tilt the alluminum inner chassis lid into a vertical orientation so as to facititate access to the motherboard. There are two screws on either side of the cooling fan assembly. Use a Phillips #2 screwdriver to loosen these captured screws (Figures 5-107 and 5-108).

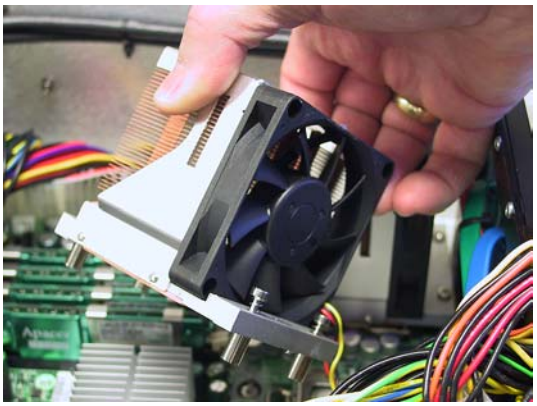


Figure 5-109

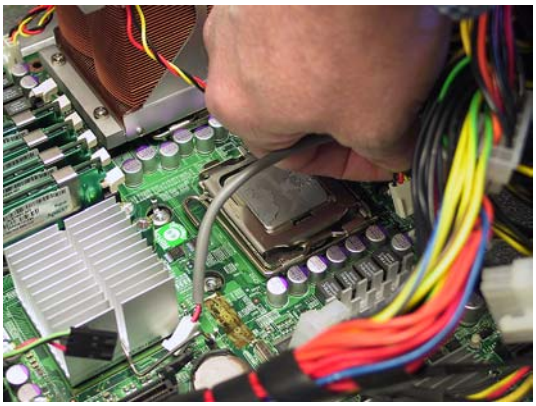


Figure 5-110

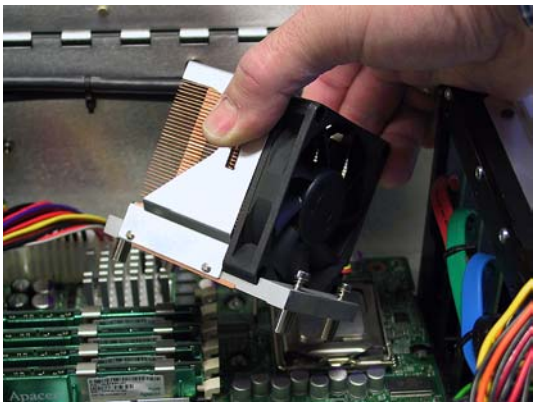


Figure 5-111

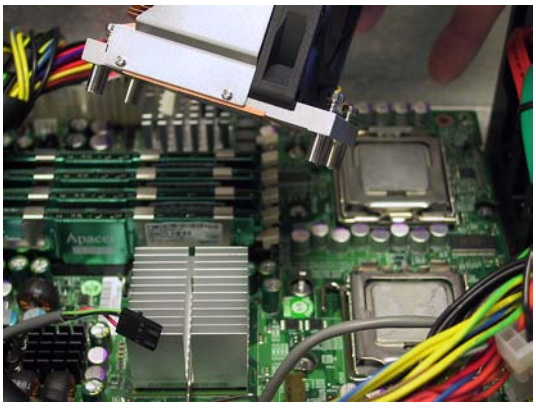


Figure 5-112

14) Gently lift the cooling fan assembly away from the chassis as illustrated in Figure 5-109.

15) Each fan has its own power connector that is attached to the main motherboard. Disconnect the power connector associated with the CPU fan (Figure 5-110).

16) Figures 5-111 and 5-112 illustrate the removal of the second CPU Fan Assembly.

Figure 5-113

Figure 5-114

Figure 5-115

Figure 5-116

17) Remove the screws from the sides and bottom of the shadow box as shown in Figure 5-113 through 5-116.

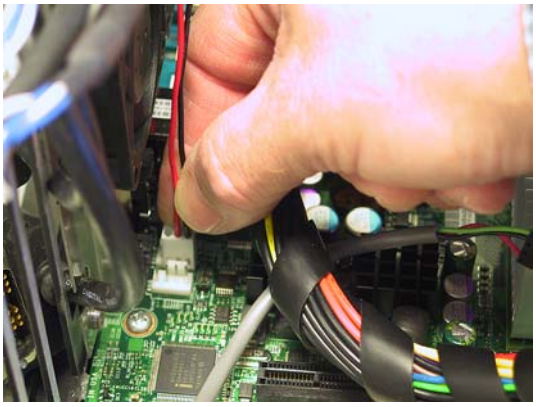


Figure 5-117

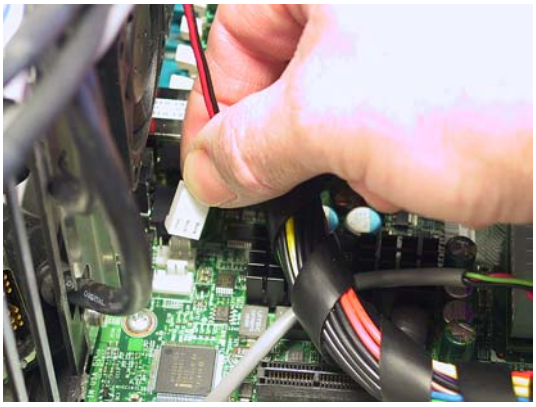


Figure 5-118

18) Disconnect the external cooling fan assembly's power supply cable from motherboard. Simply pull it away using your fingers as shown in Figures 5-117 and 5-118.

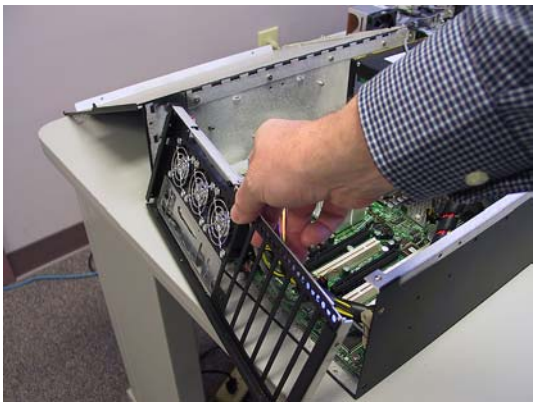


Figure 5-119

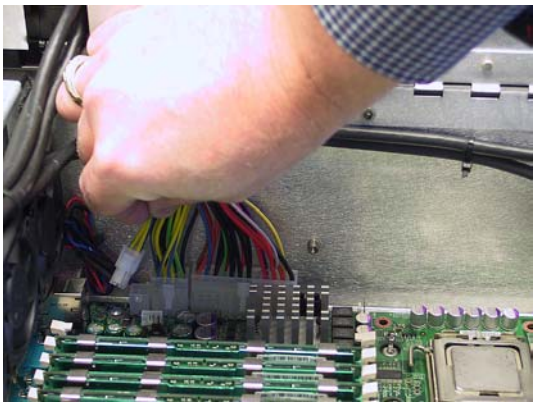


Figure 5-120

19) Remove the shadow box as shown in Figure 5-119.

20) Disconnect the EPS12V 4-pin and EPS12V 8-pin (4 x 2) power connectors from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the interior of the chassis) into the body of the connector (Figures 5-120 and 5-121).

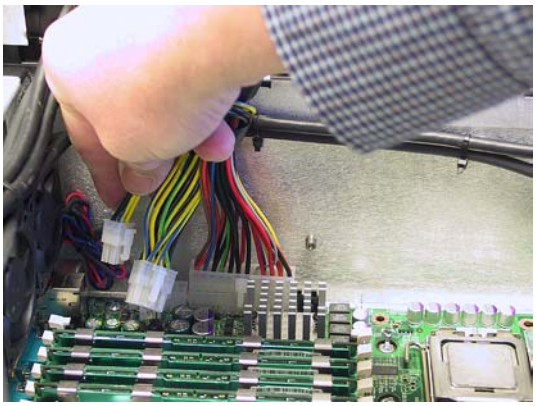


Figure 5-121

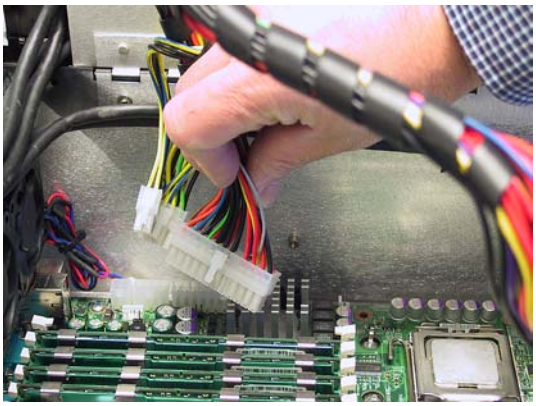


Figure 5-122

21) Disconnect the ATX 24-pin power connector from the motherboard. Pull the connector up while using a flat-blade screwdriver to push the top of the release catch (facing the bottom of the chassis) into the body of the connector (Figures 5-122).

22) Remove the audio-out cable that normally connects between the motherboard to the power distribution board (disconnect this cable from the motherboard) as shown in Figure 5-123. Observe the polarity of this connection.

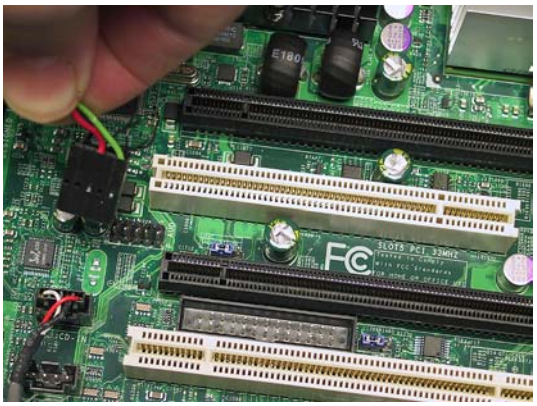


Figure 5-123

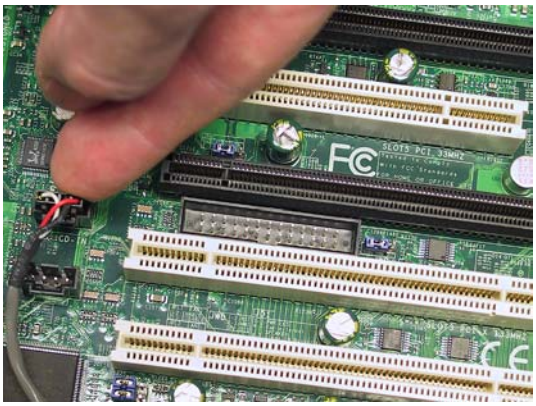


Figure 5-124

23) Remove the CD Audio In cable from the motherboard as illustrated in Figure 5-124

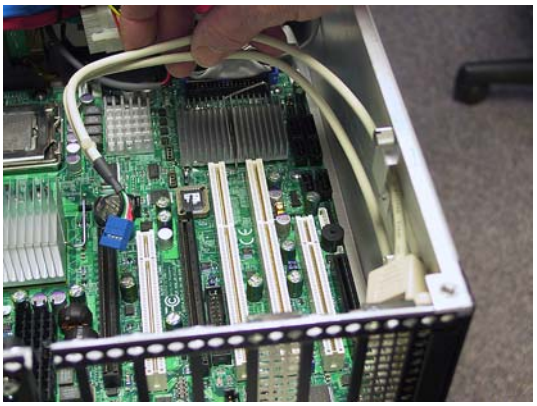


Figure 5-125

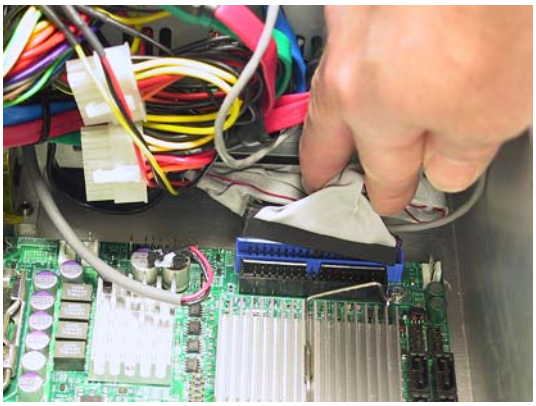


Figure 5-126

24) Remove the Internal USB cable connection from the motherboard as illustrated in Figure 5-125. These internal USB cables are normally used for USB Security Devices common with many applications

25) Remove the DVD ATA cable connecting to the ATA port of the motherboard as shown in Figure 5-126.

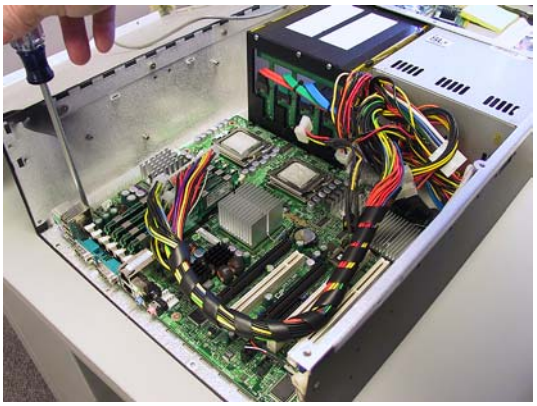


Figure 5-127

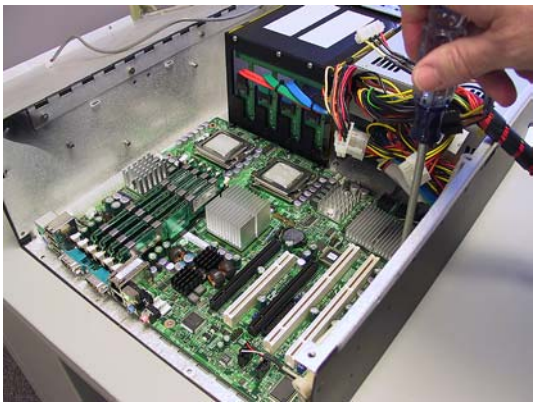


Figure 5-128

26) Remove the screws securing the motherboard to the inner chassis assembly as shown in Figures 5-127 and 5-128.

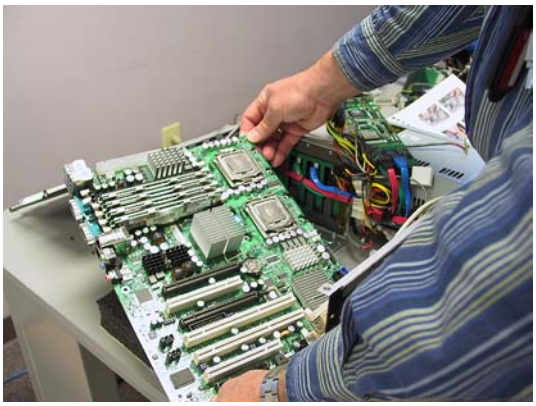


Figure 5-129

Figure 5-130

27) Now slide the motherboard out and place on a protected surface as illustrated in Figures 5-130 and 5-129.

Figure 5-131

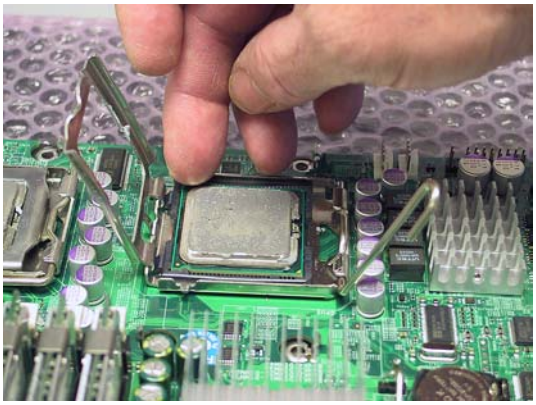


Figure 5-132

28) Under the direction of MaxVision support carefully remove the XEON series 5100 CPU from its socket as illustrated in Figures 5-131 through 5-133. Observe the keying of the CPU into its socket.

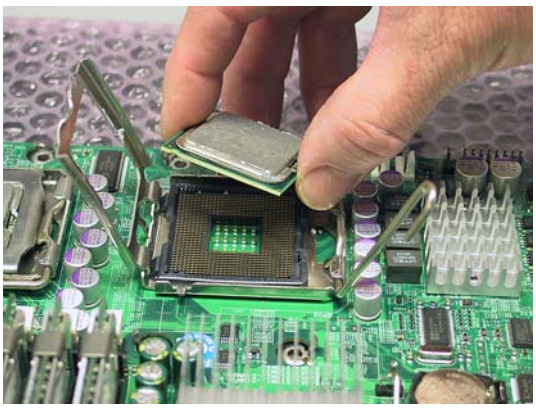


Figure 5-133

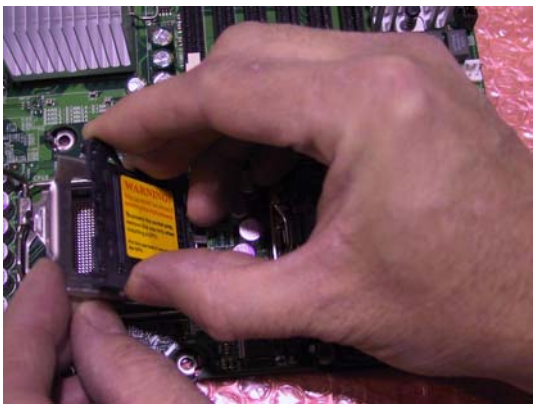


Figure 5-134

29) Gently assemble the XEON CPUs into the replacement motherboard.

Note: EXTREME CARE must be taken not to damage in any way the delicate pins used in the CPU sockets. Once bent these pins cannot be straightened resulting in the total loss of the motherboard. This type of damage is not covered under the MaxVision Warranty (this motherboard is valued at almost $500). Always remove the protective CPU pin covers from the new motherboard and install them onto the suspect or bad motherboard before any additional handling of the motherboard. The installation of the pin protector is illustrated in Figure 5-134.

Chapter 6: Installation of the optional UPS Power Management System

Installing the UPS Hardware

Note: This option is available for dual/triple display systems only.

Note: Ensure that the system is powered down and that the AC power cable is physically disconnected from the system before commencing the following procedure.

1) Open the display assembly into its service position as discussed in the *MaxPac Single / Dual / Triple-Screen 8230 XRA1/2/3 User Operation and Maintenance Guide*.

2) Use a Philips #1 screwdriver to remove the two screws attaching the wire harness protector plate to the disc array. Observe the vertically mounted auxiliary power distribution board located in the back left-hand corner of a Rev-0 system (Figure 6-1). By comparison, this board is not required in the case of a Rev-A system (Figure 6-2).

Figure 6-1

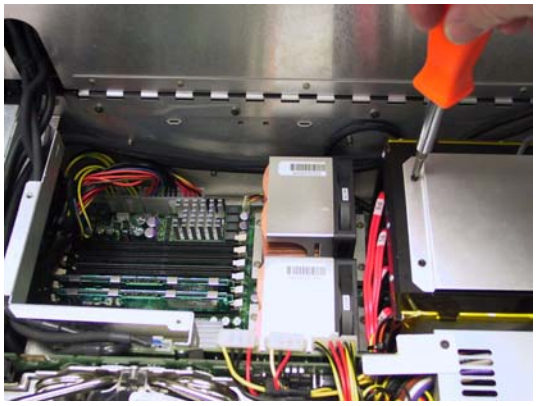


Figure 6-2

3) In the case of Rev-A systems, the left-hand display data and power cables may be located high up in the chassis as illustrated in Figure 6-3. If this is the case, gently reposition these cables to the bottom of the chassis as illustrated in Figure 6-4.

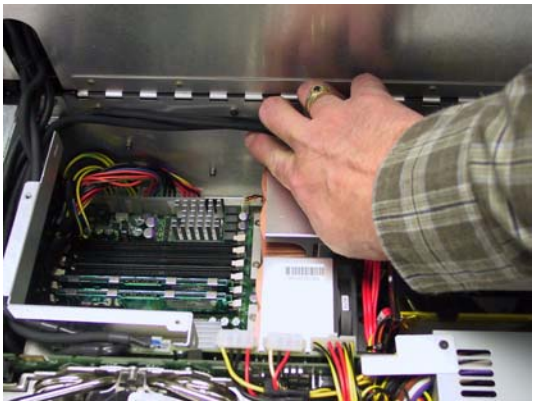


Figure 6-3

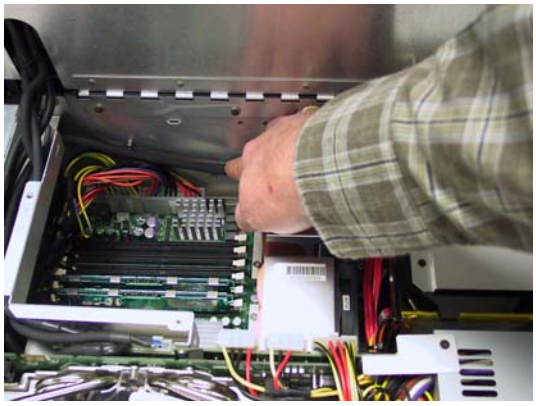


Figure 6-4

4) Remove the Uninterruptible Power Supply (UPS) from its shipping box and place it on the table near the system (Figure 6-5).

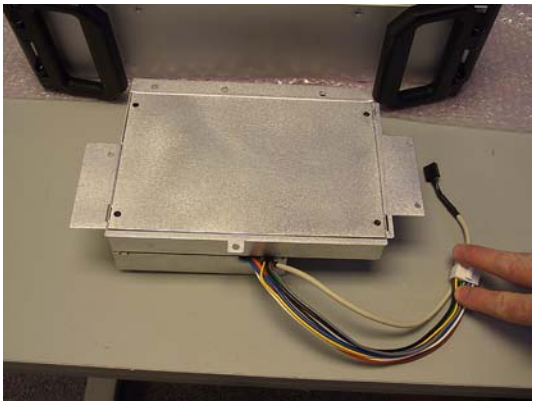


Figure 6-5

Figure 6-6

5) During shipping, the cable linking the battery to the UPS controller will be disconnected for safety reasons. Connect these two cables as illustrated in Figure 6-6.

6) Gently insert the UPS into the chassis as illustrated in Figures 6-7 and 6-8.

Figure 6-7

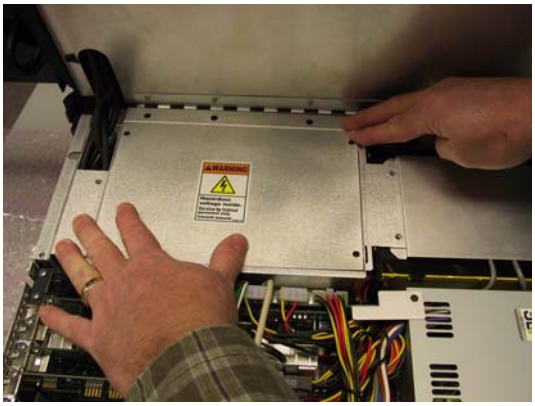


Figure 6-8

7) Use a Philips #1 screwdriver to secure the UPS using the four screws supplied as part of the UPS kit (Figures 6-9 through 6-12). (Do not use the two screws you removed from the system in step (2) because these may not be quite long enough to accommodate the extra thickness of the UPS frame.

Figure 6-9

Figure 6-10

Figure 6-11

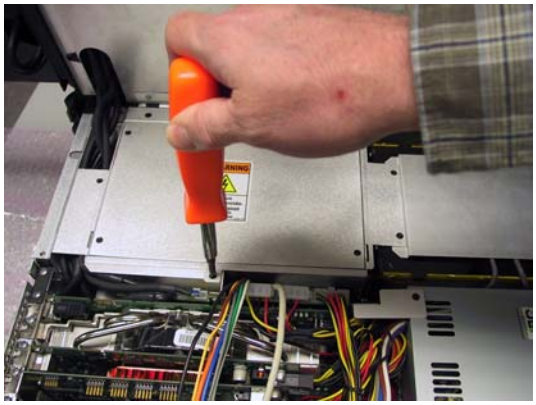


Figure 6-12

8) The system's main power supply is already equipped as standard with a custom cable that is to be connected to the UPS. This cable is used both to charge the UPS and to withdraw power form the UPS. Due to the fact that this cable supplies high voltages, it has a protective cap. Remove this protective cap as illustrated in Figure 6-13.

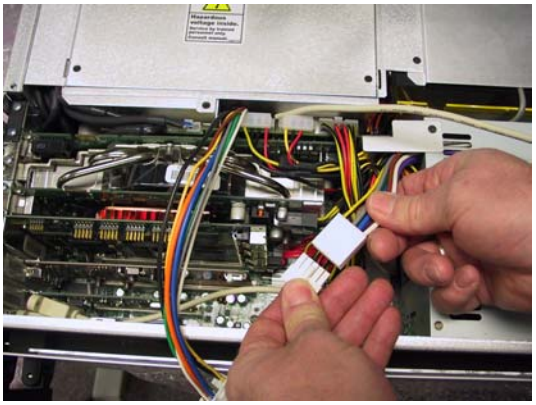


Figure 6-13

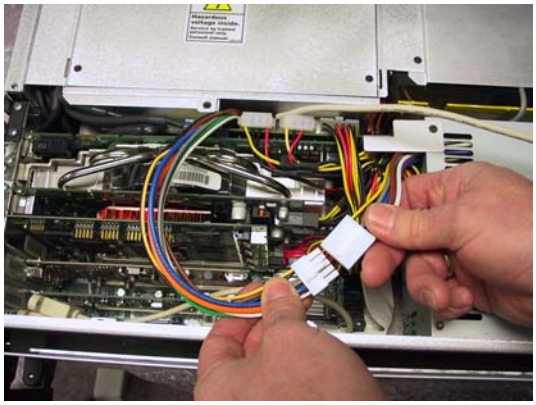


Figure 6-14

9) Connect the cables from the UPS and the system's main power supply as illustrated in Figure 6-14.

10) Gently spread the wires exiting the UPS as illustrated in Figure 6-15 so as to make them "flat" such that they won't prevent the lid from closing completely.

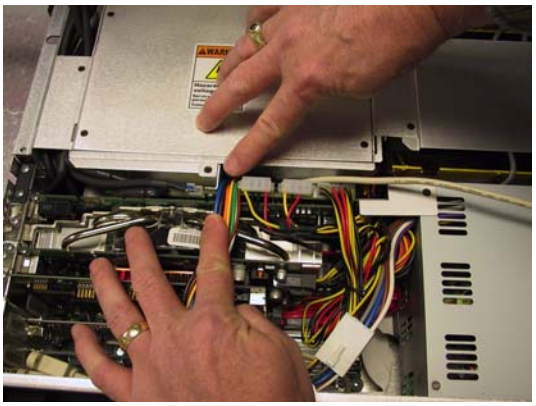


Figure 6-15

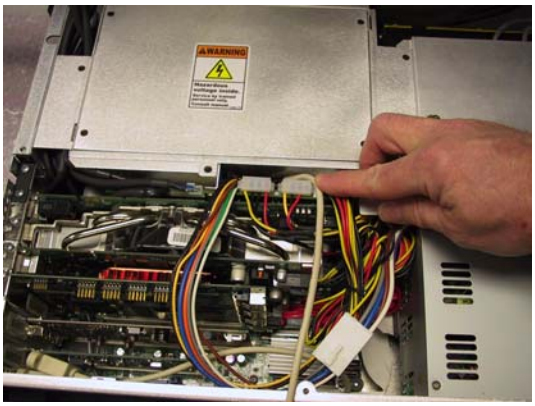


Figure 6-16

11) Observe the USB control cable coming out of the UPS as indicated by the pointing finger in Figure 6-16.

12) Connect the USB cable to the motherboard's USB header as illustrated in Figure 6-17 (the screwdriver in Figure 6-18 is simply indicating the position of this header).

Note: This plug-header combo is keyed so as to ensure that things can't be connected "back-to-front". However, it *is* possible to misalign the connector by "sliding" it over by one pin – so take care to ensure this does not occur.

Note: Observe that this cable connector should be attached to the motherboard with a flexible adhesive, such as Marine Goop (care must be taken to apply this adhesive only to the outside of the connector and to keep it away from the connector's pins).

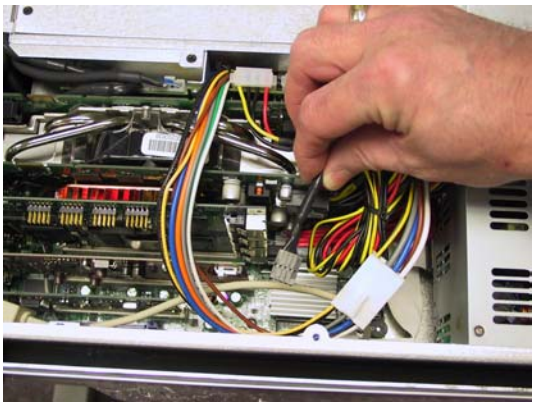


Figure 6-17

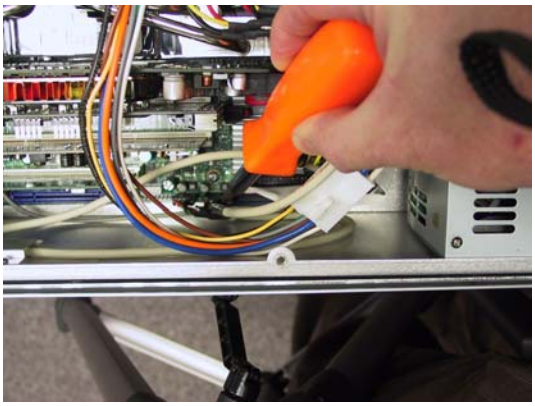


Figure 6-18

13) Close the display assembly, and then reattach the AC power cable and power-up the system as discussed in the *MaxPac Single / Dual / Triple-Screen 8230 XRA1/2/3 User Operation and Maintenance Guide*.

Installing the UPS Software

1) Install the UPS hardware as discussed in the previous chapter.
2) Ensure that the AC power cable is connected and that the system has been powered-up as discussed in the *MaxPac Single / Dual / Triple-Screen 8230 XRA1/2/3 User Operation and Maintenance Guide*.
3) Insert the CD-ROM that came with your UPS kit into the MaxPac's CD/DVD drive. If the CD doesn't start automatically, use **Windows Explorer** to locate the *setup.exe* file on the CD and then double-click on this file to run it. This will result in the **MaxUPS Setup** dialog shown in Figure 6-19.

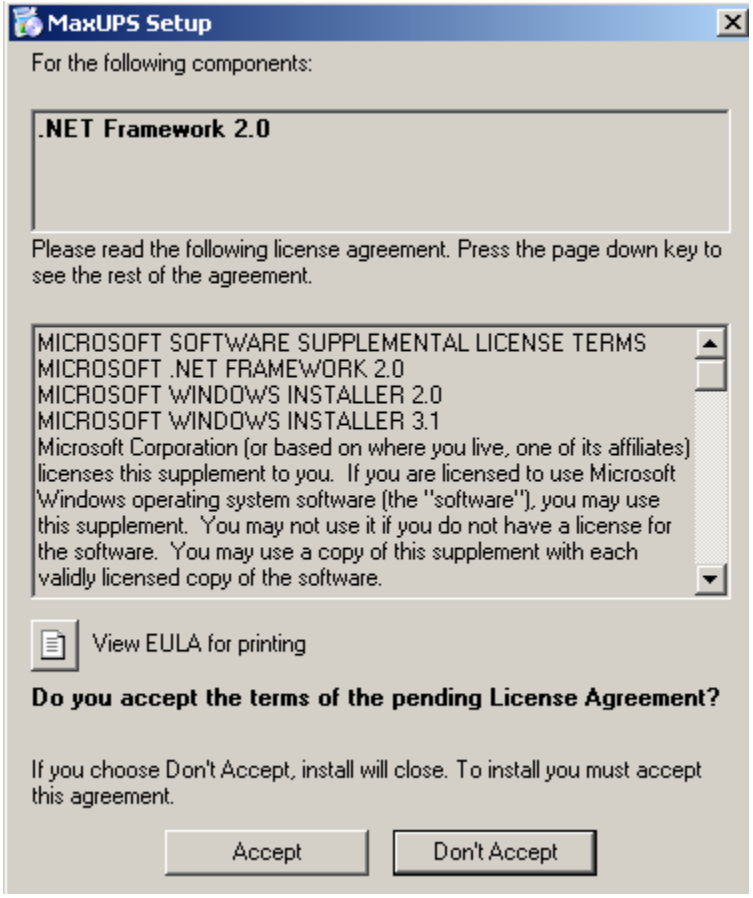

MaxUPS Setup
For the following components:
.NET Framework 2.0
Please read the following license agreement. Press the page down key to see the rest of the agreement.
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
MICROSOFT .NET FRAMEWORK 2.0
MICROSOFT WINDOWS INSTALLER 2.0
MICROSOFT WINDOWS INSTALLER 3.1
Microsoft Corporation (or based on where you live, one of its affiliates) licenses this supplement to you. If you are licensed to use Microsoft Windows operating system software (the "software"), you may use this supplement. You may not use it if you do not have a license for the software. You may use a copy of this supplement with each validly licensed copy of the software.
View EULA for printing
Do you accept the terms of the pending License Agreement?
If you choose Don't Accept, install will close. To install you must accept this agreement.
Accept
Don't Accept

Figure 6-19

4) Read the agreement and – assuming you accept the terms – click the **Accept** button; otherwise click the **Don't Accept** button (of course, if you don't accept these terms then we're all wasting our time, aren't we?).

Note: The remainder of these discussions assume that you *did* click the **Accept** button.

5) Observe the dialog showing the progress of the files being copied off the CD and installed on your system as illustrated in Figure 6-20.

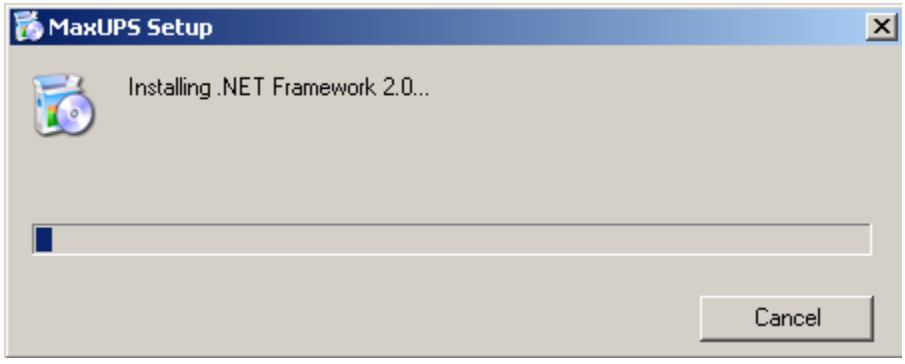


Figure 6-20

6) Once all of the files have been copied, you will be presented with the **MaxUPS Setup Wizard** as illustrated in Figure 6-21.

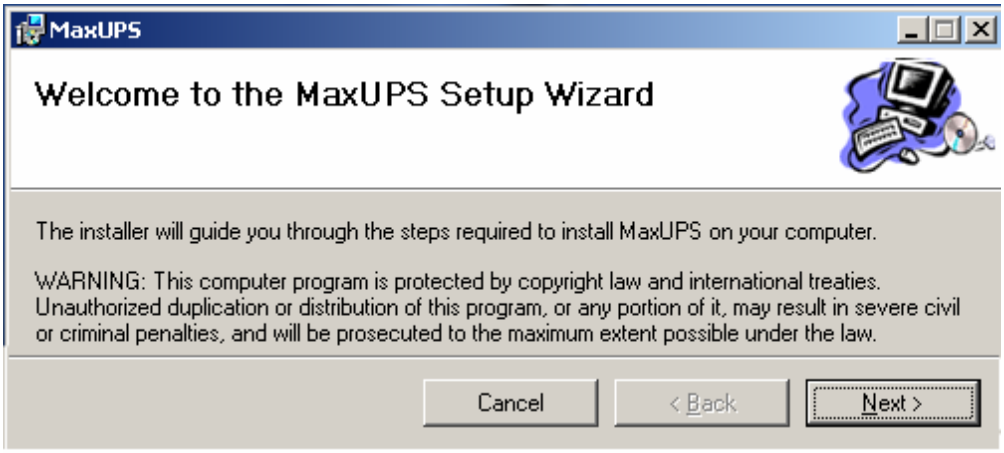

MaxUPS
Welcome to the MaxUPS Setup Wizard
The installer will guide you through the steps required to install MaxUPS on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

Figure 6-22

7) Click the **Next** button and observe the **Select Installation Folder** dialog (Figure 6-23).

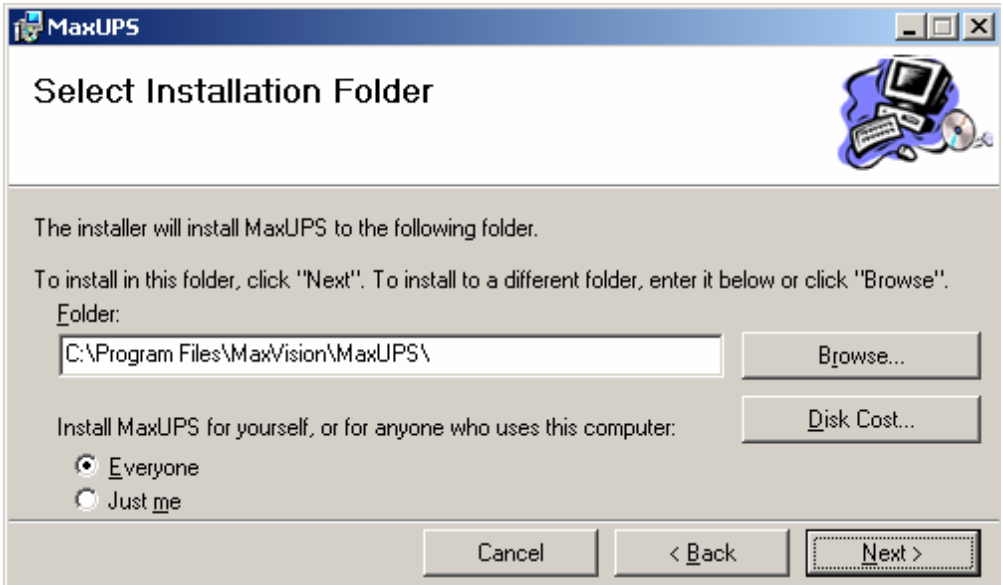

MaxUPS
Select Installation Folder
The installer will install MaxUPS to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\MaxVision\MaxUPS\
Browse...
Disk Cost...
Install MaxUPS for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

Figure 6-23

8) Click the **Next** button to confirm the default selection and observe the **Confirm Installation** dialog as illustrated in Figure 6-24.

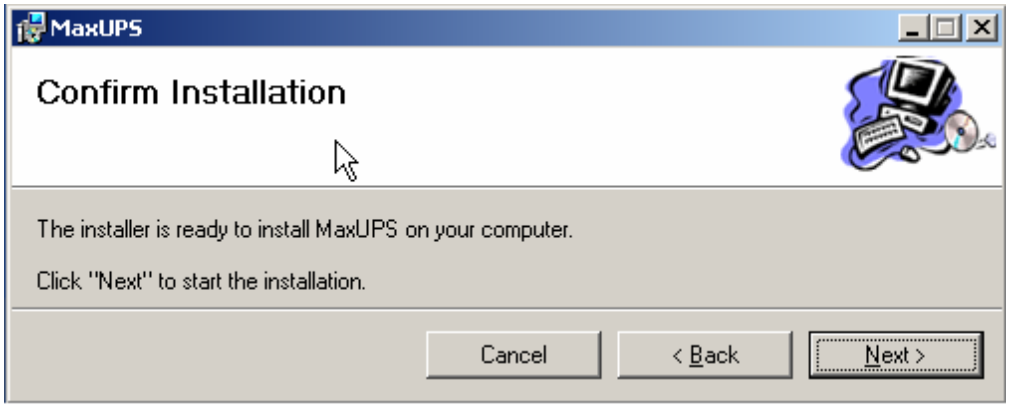

MaxUPS
Confirm Installation
The installer is ready to install MaxUPS on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Figure 6-24

9) Click the **Next** button to confirm the installation and observe the **Installation Complete** dialog as illustrated in Figure 6-25.

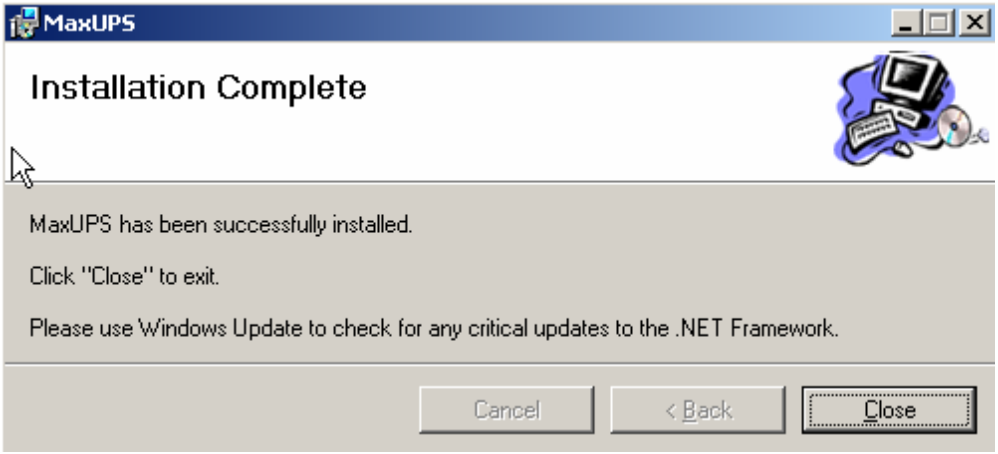


Figure 6-25

10) Click the **Close** button. The UPS software has now been installed.

Using the UPS Software

1) Once the MaxUPS software has been installed as discussed in the previous topic, a corresponding **MaxUPS** icon will appear in the system's task tray (this is the black square containing the orange 'M' and 'V' characters for MaxVision as illustrated in Figure 6-26).

Figure 6-26

2) Double-click on the **MaxUPS** icon to access the **MaxVision UPS Power Management** dialog as illustrated in Figure 6-27.

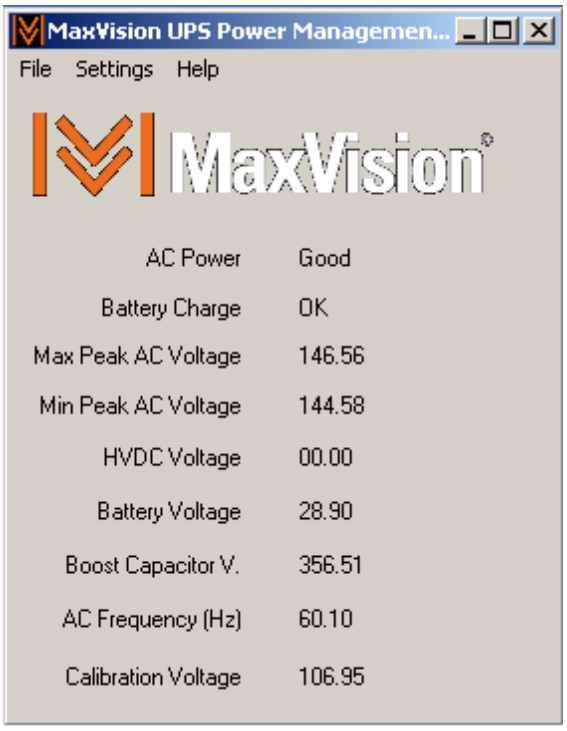


Figure 6-27

3) Most of these fields are diagnostic in nature. The two important fields for users are the **AC Power** (which should be **Good**) and the **Battery Charge** (which will be **OK** or **LOW**).

4) Use your mouse to click on the **Settings** pull-down menu and access the **Settings** dialog as illustrated in Figure 6-28.

Figure 6-28

5) Observe that the default **Shut Down Delay** value is set to 10 minutes, but it is recommended that you select a shorter duration.

6) Once you've specified the required **Shut Down Delay** value, click the **OK** button to accept this value.

7) In order to simulate a power failure, disconnect the AC power cable while the system is in a powered-up condition. This will result in the following dialog appearing on the screen (Figure 6-29).

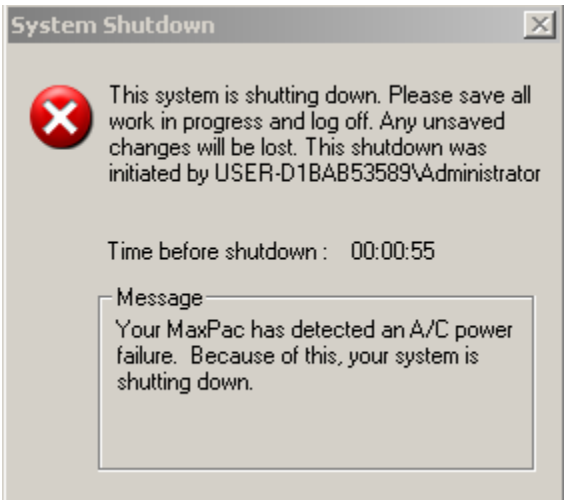

System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by USER-D1BAB53589\Administrator
Time before shutdown : 00:00:55
Message
Your MaxPac has detected an A/C power failure. Because of this, your system is shutting down.

Figure 6-29

8) Observe the value displayed next to the **Time before shutdown** text. This constantly updating field reflects the amount of time left until the system will shut down (55 seconds are left in the case of this particular example).

Note: As soon as this dialog appears, the system will start to sound a warning beep. The duration of this beep should be approximately once-per-second. Once the battery falls below a certain critical level (which may occur before the countdown times out if the system has been subject to multiple power failures before the UPS has had time to recharge), the rate will increase to two times-per-second and the UPS controller will quickly force a shut-down, irrespective of any time left on the countdown timer (this will be a *forced shutdown* – not the *graceful shutdown* as described in the following points).

Note: When the countdown is completed, the UPS software will use system commands to automatically close any active applications and then shut down the system. (**Very Important**: Any unsaved data will be lost).

Note: If AC power is restored to the system before the countdown times out, then the shutdown sequence will be automatically aborted.

Note: If a power failure occurs while you are operating the system, you should save all of your data and close down your applications by hand before the shutdown takes effect.

Note: If you intend to leave your system unattended, it is recommended that – at a minimum – you save any unsaved data files; preferably you will also close any open data files; and ideally you will also exit any applications.

In the real-world, however, many users neglect to perform any of these tasks. On this basis, it is strongly recommended that you set the time between **Auto-Saves** to be less than the **Shut Down Delay** value you define in point (5); note that you will have to do this for each application.

Chapter 7: Optional TeraPac 3 Connection to the MaxPac8230

1) The remainder of these instructions assume that your MaxPac 8230 is equipped with a 12-channel *3ware* RAID controller card. A quick way to check this is to ensure that the cables connected to the four internal disks are all red as illustrated in Figure 7-1. (In the case of earlier 8230 models equipped with a 4-channel *3ware* RAID controller card, these cables will be color coded)

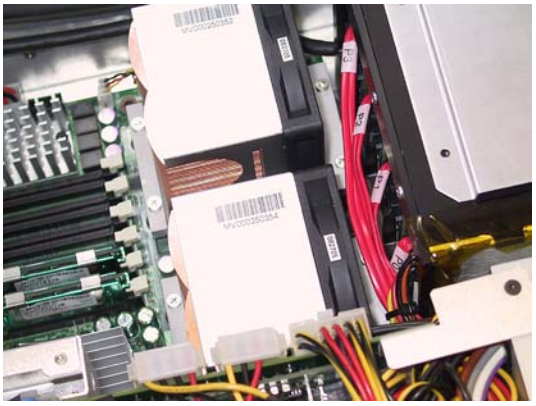


Figure 7-1

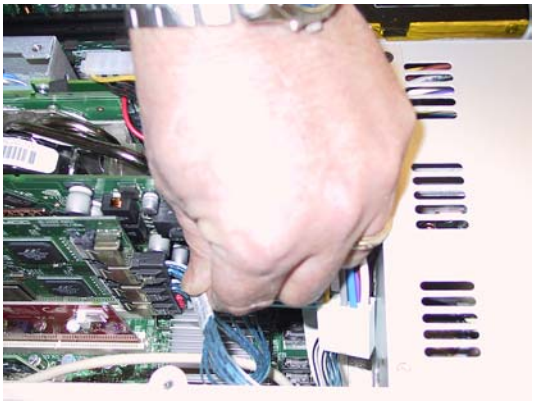


Figure 7-2

2) There are three 4-channel connectors on the 12-channel *3ware* RAID controller card. The bottom connector is used for the four internal drives. The multi-lane (ML) cable marked *disk 0-3* connect to the middle connector; the ML cable marked *disk 4-7* connect to the top connector (Figure 7-2). These two 4-channel ML cables connect to an external SATA bracket mounted under the CD/DVD.

Using the TeraPac 3 with a MaxPac 8230

1) Take the TeraPac 3 data/control cable marked *disks 0-3* and plug one end into the upper connector on the MaxPac system as illustrated in Figure 7-3 (this connector will also be annotated *disks 0-3*).

Figure 7-3

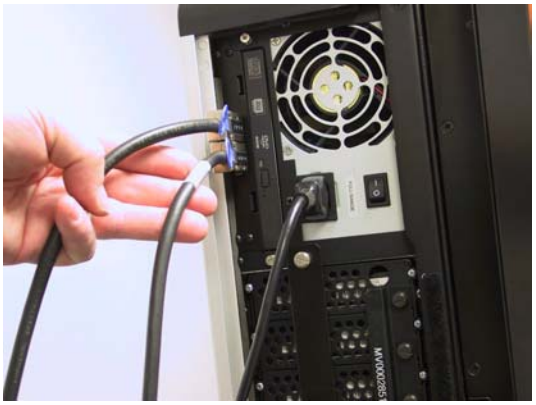


Figure 7-4

2) Take the TeraPac 3 data/control cable marked *disks 4-7* and plug one end into the lower connector on the MaxPac system as illustrated in Figure 7-4 (this connector will also be annotated *disks 4-7*).

3) Plug the other ends of these data/control cables into the correspondingly labeled connectors on the TeraPac 3 unit as illustrated in Figure 7-5 (the *disks 0-3* connector is located on the right-hand-side of the back face of the unit – this is the connector being pointed to in Figure 7-5).

4) Refer to the TeraPac 3 User Operation and Maintenance Guide for more details on the RAID setup of the TeraPac 3 connection to the MaxPac8230.

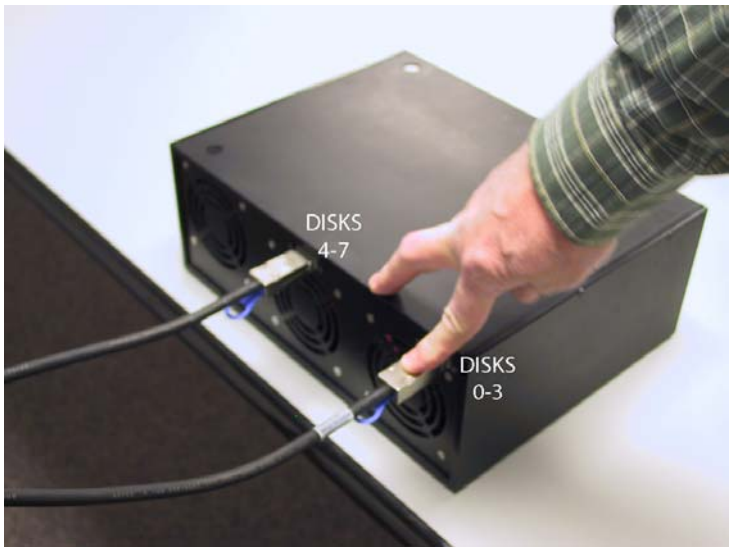


Figure 7-5

Appendix A: Creating and Using Backup Images (Including Restoring Your OS)

Introduction

Every MaxVision system comes equipped with a *MaxVision Recovery DVD*. In addition to an image of your operating system, this disc also contains a copy of the *Acronis True Image*™ application from Acronis (www.acronis.com). *Acronis True Image* is a superb tool for operating system (OS) deployment, software distribution, back-up, and disaster recovery. In particular, this utility allows you to make reliable backups of your system drives, including applications and critical data. There are two primary scenarios that need be considered as follows:

Restoring the MaxVision-supplied Image

This is the worst-case scenario. It assumes that your system has undergone some catastrophic failure such that – under the direction of MaxVision support – you are going to replace your primary hard drive(s) and/or restore the original MaxVision-supplied image. In this case, you will lose any applications and data that you have installed, loaded, or created on your main "C:" drive/partition.

Note: If you do re-load the original MaxVision-supplied image, you will also have to re-run the initialization procedures – including re-activating/re-registering your OS license – as described earlier in this manual.

1) Power-down the system.
2) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive.
3) Power-up the system. This will automatically launch the Acronis application as shown in Figure A-1.

Figure A-1

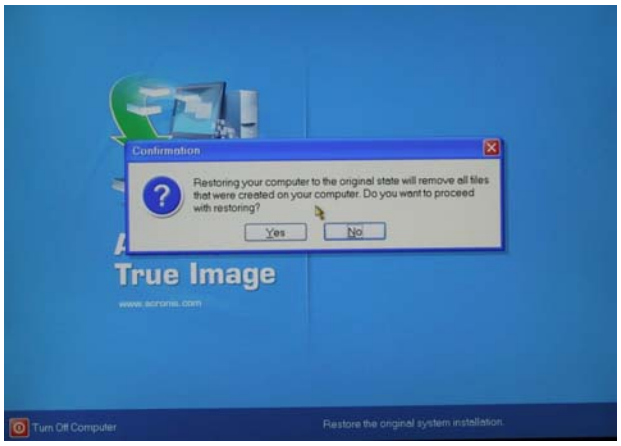

Confirmation
Restoring your computer to the original state will remove all files that were created on your computer. Do you want to proceed with restoring?
Yes
No
True Image
Turn Off Computer
Restore the original system installation

Figure A-2

4) Select Yes in the dialog shown in Figure A-2 to allow Acronis to completely restore your disk.
5) Figures A-3 and A-4 show the completing steps for restoring you image back to the MaxVision configuration as originally shipped.

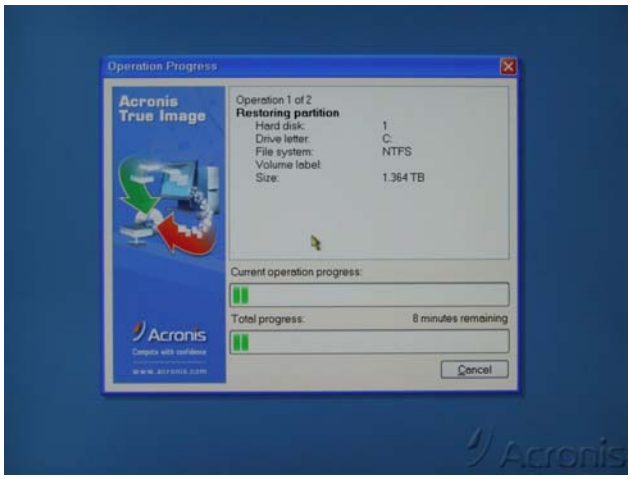


Figure A-3

Figure A-4

Creating Your Own Image

This scenario assumes that you have added new applications, loaded or created new datasets, and generally configured and customized your MaxVision system the way you like it. At this stage, before you deploy the system, it is strongly recommended that you use the *Acronis True Image* application to create an image of the system. Similarly, as you add additional applications or generate additional datasets, it is strongly recommended that you create periodic backup images. This greatly facilitates your ability to return the system to a “known good state” should any problems arise (such as a virus attack or a hard drive failure) at some stage in the future.

For the purposes of this example, we will assume that you are writing your image to CD media (as opposed to DVD), and that the image will occupy two CDs.

1) Power-down the system.
2) In this case you will need to create your own Acronis Recovery bootable DVD media from the Acronis Windows application.
3) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive. In the case of a multiple DVD image, ensure Disk #1 is in the drive.
4) Power-up the system. This will automatically launch the Acronis application as shown in Figure A5. Use the mouse to select the Acronis item as shown in Figure A-5.

Figure A-5

Figure A-6

5) Following the splash screen (Figure A-6), under the **Pick a Task** heading, select the **Backup** option (the top item) as illustrated in Figure A-7.

Acronis True Image Home
Operations View Tools Help
Tools
Manage Acronis Secure Zone
Activate Acronis Startup Recovery Manager
Validate Backup Archive
Show Log
Pick a Task
Pick a Task for the Local Computer
Backup
Back up your files, folders or the entire hard disk
Recovery
Recover the entire hard disk contents or restore individual files
Clone Disk
Clone your hard disk drive by copying partitions to another hard disk
Add New Disk
Add a new hard disk drive to your computer
or Pick a Tool
Manage Acronis Secure Zone
Activate Acronis Startup Recovery Manager
Validate Backup Archive
Local Computer

Figure A-7

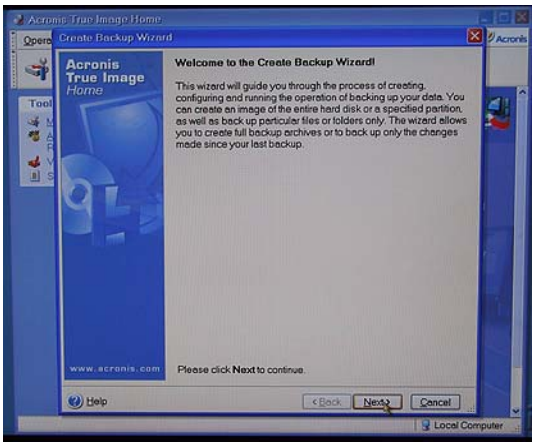

Acronis True Image Home
Create Backup Wizard
Acronis True Image Home
Welcome to the Create Backup Wizard!
This wizard will guide you through the process of creating, configuring and running the operation of backing up your data. You can create an image of the entire hard disk or a specified partition, as well as back up particular files or folders only. The wizard allows you to create full backup archives or to back up only the changes made since your last backup.
www.acronis.com
Please click Next to continue.
Help
< Back
Next >
Cancel
Local Computer

Figure A-8

6) Follow the actions depicted by the screenshots shown in Figures A-8 through A-22.

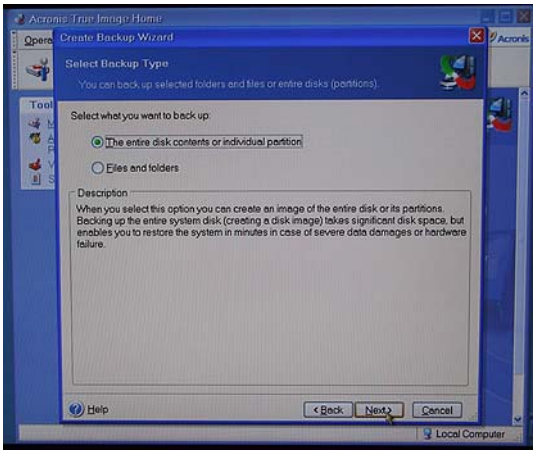

Acronis True Image Home
Create Backup Wizard
Select Backup Type
You can back up selected folders and files or entire disks (partitions)
Select what you want to back up:
The entire disk contents or individual partition
Files and folders
Description
When you select this option you can create an image of the entire disk or its partitions. Backing up the entire system disk (creating a disk image) takes significant disk space, but enables you to restore the system in minutes in case of severe data damages or hardware failure.
Help
< Back
Next >
Cancel
Local Computer

Figure A-9

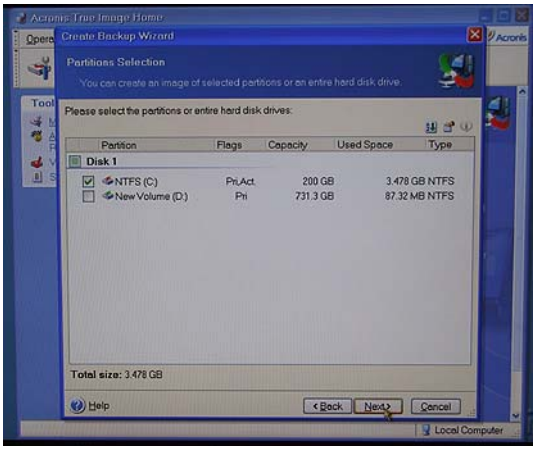


Figure A-10

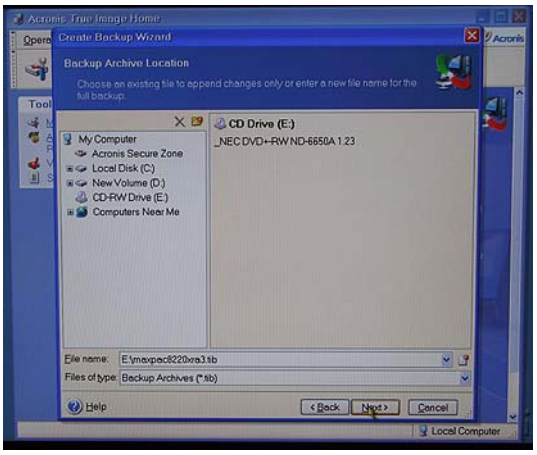


Figure A-11

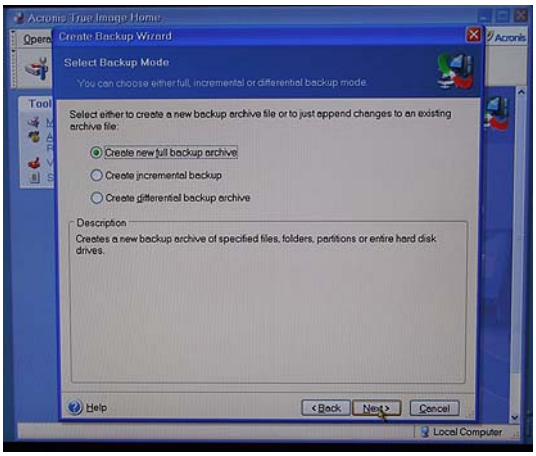

Acronis True Image Home
Create Backup Wizard
Select Backup Mode
You can choose either full, incremental or differential backup mode.
Select either to create a new backup archive file or to just append changes to an existing archive file:
Create new full backup archive
Create incremental backup
Create differential backup archive
Description
Creates a new backup archive of specified files, folders, partitions or entire hard disk drives.
Help
< Back
Next >
Cancel
Local Computer

Figure A-12

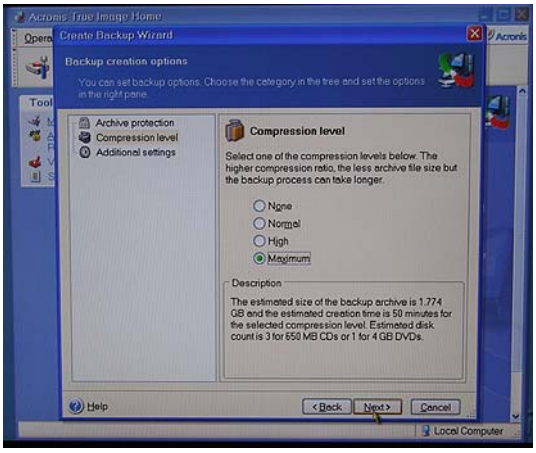

Acronis True Image Home
Create Backup Wizard
Backup creation options
You can set backup options. Choose the category in the tree and set the options in the right pane.
Archive protection
Compression level
Additional settings
Compression level
Select one of the compression levels below. The higher compression ratio, the less archive file size but the backup process can take longer.
None
Normal
High
Maximum
Description
The estimated size of the backup archive is 1,774 GB and the estimated creation time is 50 minutes for the selected compression level. Estimated disk count is 3 for 650 MB CDs or 1 for 4 GB DVDs.
Help
< Back
Next >
Cancel
Local Computer

Figure A-13

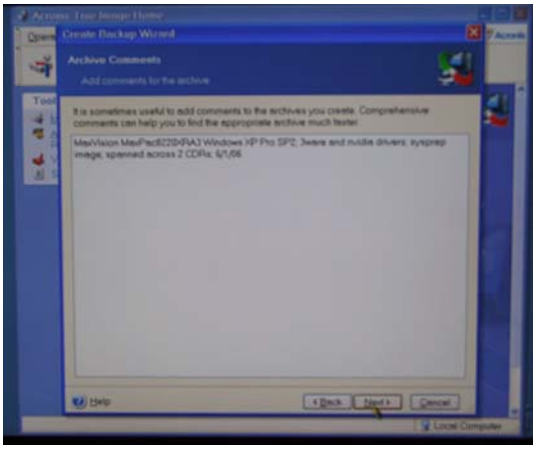

Create Backup Wizard
Archive Comments
Add comments for the archive
It is sometimes useful to add comments to the archives you create. Comprehensive comments can help you to find the appropriate archive much faster.
MaxVision MaxPac8220-RA3 Windows XP Pro SP2; 3ware and nvidia drivers; sysprep image; spanned across 2 CDRs; 6/1/06
Help
< Back
Next >
Cancel
Local Computer

Figure A-14

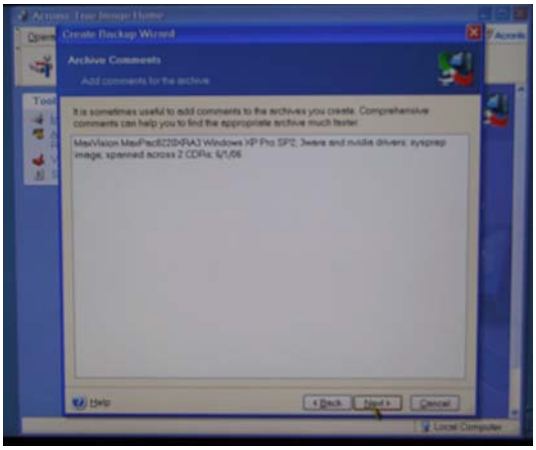

Create Backup Wizard
Archive Comments
Add comments for the archive
It is sometimes useful to add comments to the archives you create. Comprehensive comments can help you to find the appropriate archive much faster.
MaxVision MaxPac8220-RA3 Windows XP Pro SP2; 3ware and nvidia drivers; sysprep image; spanned across 2 CDRs; 6/1/06
Help
< Back
Next >
Cancel
Local Computer

Figure A-15

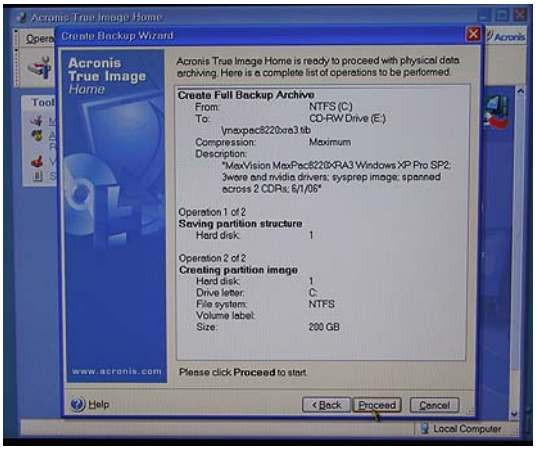


Figure A-16

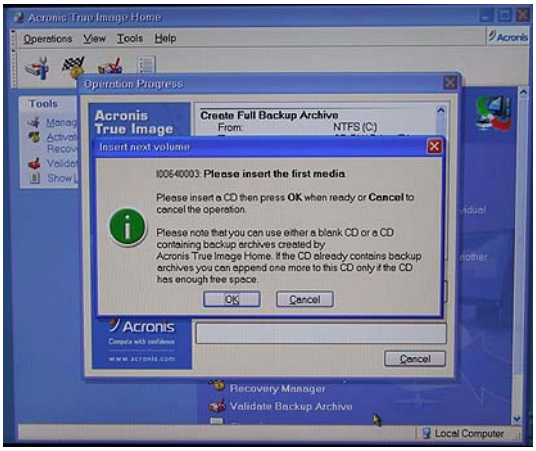

Acronis True Image Home
Operations View Tools Help
Operation Progress
Acronis True Image
Create Full Backup Archive
From: NTFS (C:)
Insert next volume
I00640003: Please insert the first media
Please insert a CD then press OK when ready or Cancel to cancel the operation.
Please note that you can use either a blank CD or a CD containing backup archives created by Acronis True Image Home. If the CD already contains backup archives you can append one more to this CD only if the CD has enough free space.
OK
Cancel
Acronis
Cancel
Recovery Manager
Validate Backup Archive
Local Computer

Figure A-17

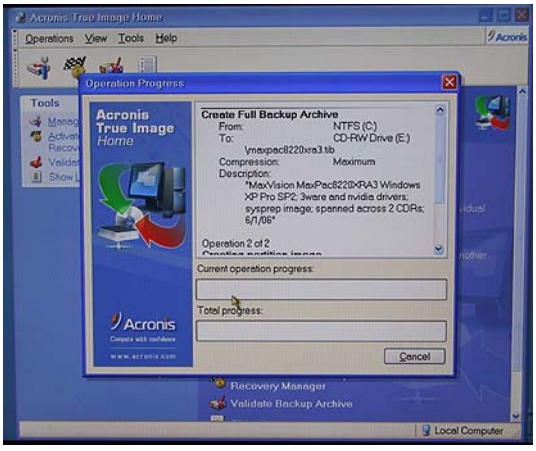


Figure A-18

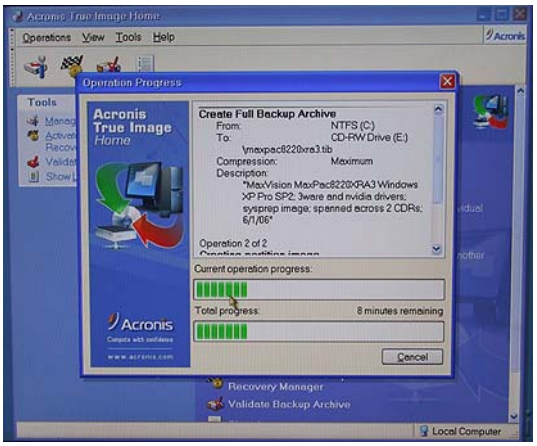


Figure A-19

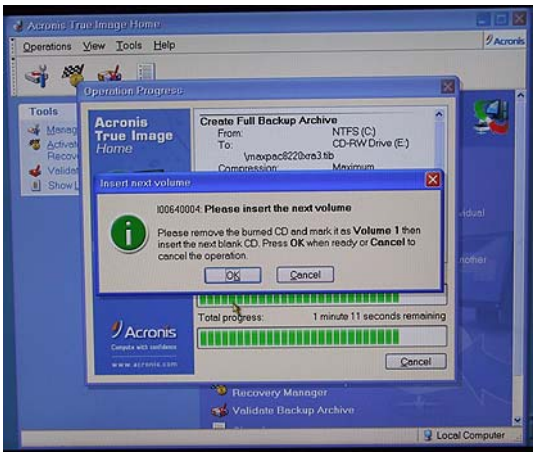

Acronis True Image Home
Operations View Tools Help
Operation Progress
Create Full Backup Archive
Insert next volume
I00640004: Please insert the next volume
Please remove the burned CD and mark it as Volume 1 then insert the next blank CD. Press OK when ready or Cancel to cancel the operation.
OK
Cancel
Total progress:
1 minute 11 seconds remaining
Recovery Manager
Validate Backup Archive
Local Computer

Figure A-20

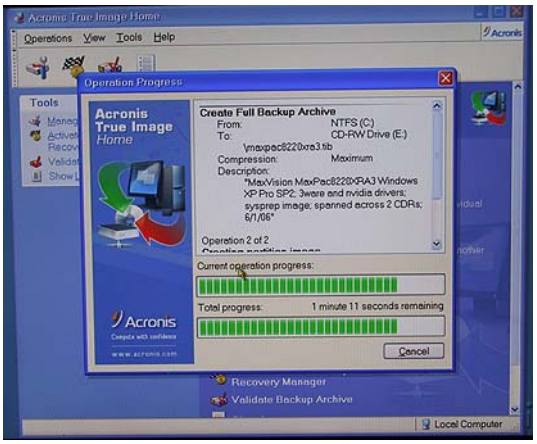


Figure A-21

Acronis True Image Home
Operations View Tools Help
Pick a Task
Pick a Task for the Local Computer
Information
Backup archive creation has been completed successfully.
OK
Add New Disk
Add a new hard disk drive to your computer
or Pick a Tool
Manage Acronis Secure Zone
Activate Acronis Startup Recovery Manager
Validate Backup Archive
Local Computer

Figure A-22

Restoring Your Own Image

Note: If you do re-load an image (containing the OS) that you have created yourself following your original activation and registration of the OS, you will NOT be required to re-activate and re-register the OS so long as you are restoring the image to the original machine. However, you will be required to re-activate and re-register the OS if you re-load the image onto a different machine. Prior to shipment from MaxVision the Microsoft SYSPREP utility is used to clear out the license number and other settings following system test. If you create your own image, and if SYSPREP is not run, and you subsequently load your image onto another MaxPac system, then Microsoft will require activation before use (no 30 day grace period). At this time, you will need to supply the correct OS license number for the MaxPac and activate prior to use (this procedure may vary depending on the version and license type of Windows used).

For the purposes of this example, we will assume that you are restoring your image from CD media (as opposed to DVD), and that the image occupies two CDs.

1) Power-down the system.
2) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive. In the case of a multiple DVD image, ensure Disk #1 is in the drive.

3) Power-up the system. This will automatically launch the Acronis application as shown in Figure A-23. Use the mouse to select the Acronis item as shown in Figure A-23.

Figure A-23

Figure A-24

4) Following the splash screen (Figure A-24), under the **Pick a Task** heading, select the **Restore** option (the top item) as illustrated in Figure A-25.

5) Follow the actions depicted by the screenshots shown in Figures A-25 through A-43.

Acronis True Image Home
Operations View Tools Help
Tools
Manage Acronis Secure Zone
Activate Acronis Startup Recovery Manager
Validate Backup Archive
Show Log
Pick a Task
Pick a Task for the Local Computer
Backup
Back up your files, folders or the entire hard disk
Recovery
Recover the entire hard disk contents or restore individual files
Clone Disk
Clone your hard disk drive by copying partitions to another hard disk
Add New Disk
Add a new hard disk drive to your computer
or Pick a Tool
Manage Acronis Secure Zone
Activate Acronis Startup Recovery Manager
Validate Backup Archive
Local Computer

Figure A-25

Acronis True Image Home
Restore Data Wizard
Acronis True Image Home
Welcome to the Restore Data Wizard!
This wizard will help you to recover lost or corrupted files or entire partitions from the backup archive you have previously created.
www.acronis.com
Please click Next to continue.
Help
< Back
Next >
Cancel
Local Computer

Figure A-26

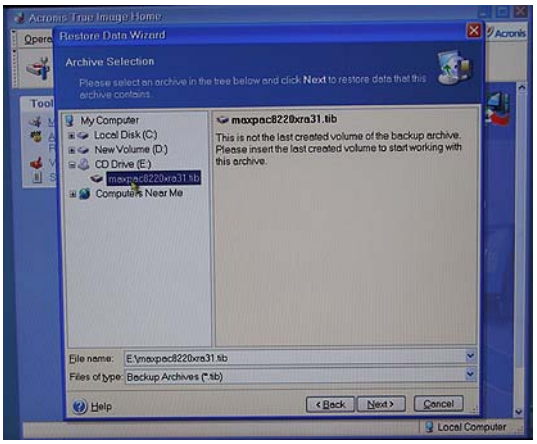

Acronis True Image Home
Restore Data Wizard
Archive Selection
Please select an archive in the tree below and click Next to restore data that this archive contains.
My Computer
Local Disk (C:)
New Volume (D:)
CD Drive (E:)
maxpac8220xra31.tib
Computers Near Me
maxpac8220xra31.tib
This is not the last created volume of the backup archive. Please insert the last created volume to start working with this archive.
File name: E:\maxpac8220xra31.tib
Files of type: Backup Archives (*.tib)
Help
< Back
Next >
Cancel
Local Computer

Figure A-27

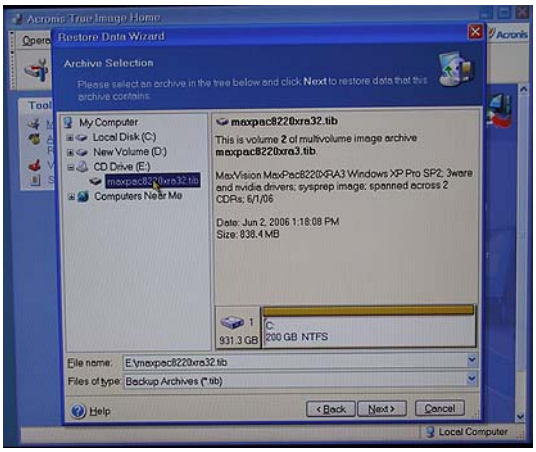

Acronis True Image Home
Restore Data Wizard
Archive Selection
Please select an archive in the tree below and click Next to restore data that this archive contains.
My Computer
Local Disk (C:)
New Volume (D:)
CD Drive (E:)
maxpac8220xra32.tib
Computers Near Me
maxpac8220xra32.tib
This is volume 2 of multivolume image archive maxpac8220xra3.tib
MaxVision MaxPac8220XRA3 Windows XP Pro SP2; 3ware and nvidia drivers; sysprep image; spanned across 2 CDRs; 6/1/06
Date: Jun 2, 2006 1:18:08 PM
Size: 838.4 MB
931.3 GB
C:
200 GB NTFS
File name: E:\maxpac8220xra32.tib
Files of type: Backup Archives (*.tib)
Help
< Back
Next >
Cancel
Local Computer

Figure A-28

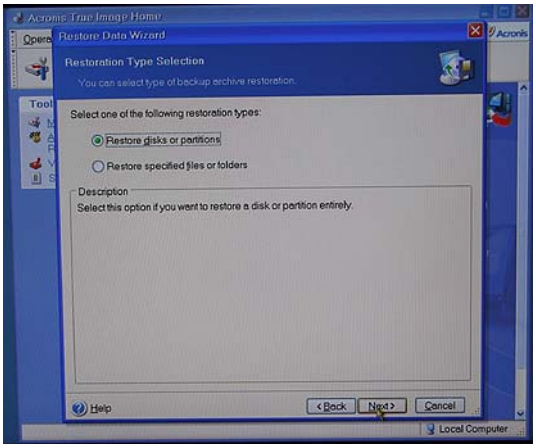

Acronis True Image Home
Restore Data Wizard
Restoration Type Selection
You can select type of backup archive restoration.
Select one of the following restoration types:
Restore disks or partitions
Restore specified files or folders
Description
Select this option if you want to restore a disk or partition entirely.
Help
< Back
Next >
Cancel
Local Computer

Figure A-29

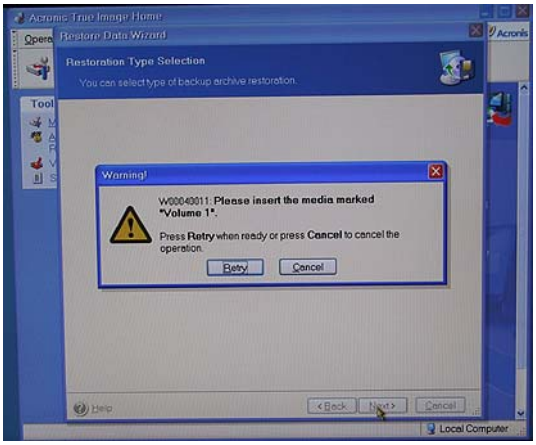


Figure A-30

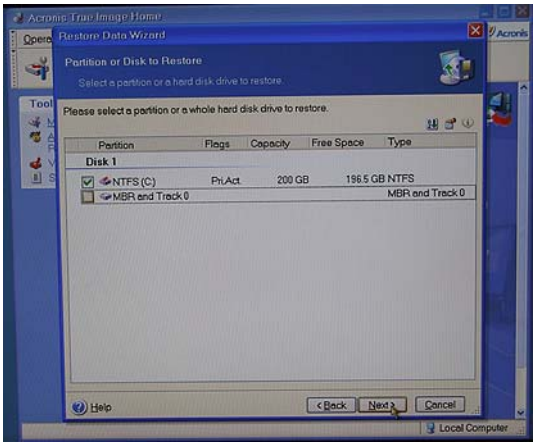


Figure A-31

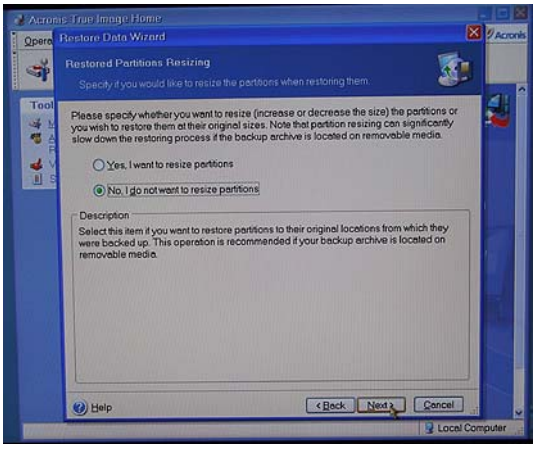

Acronis True Image Home
Restore Data Wizard
Restored Partitions Resizing
Specify if you would like to resize the partitions when restoring them.
Please specify whether you want to resize (increase or decrease the size) the partitions or you wish to restore them at their original sizes. Note that partition resizing can significantly slow down the restoring process if the backup archive is located on removable media.
Yes, I want to resize partitions
No, I do not want to resize partitions
Description
Select this item if you want to restore partitions to their original locations from which they were backed up. This operation is recommended if your backup archive is located on removable media.
Help
< Back
Next >
Cancel
Local Computer

Figure A-32

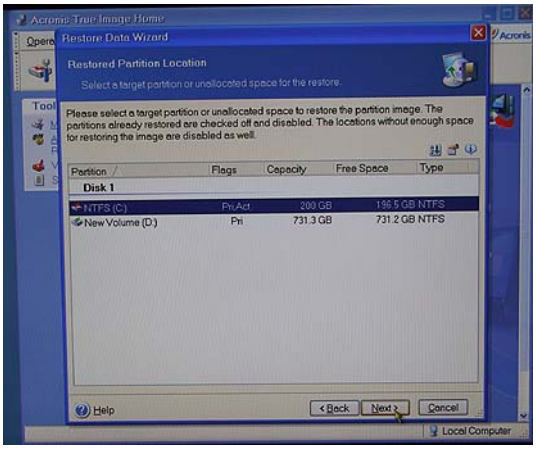


Figure A-33

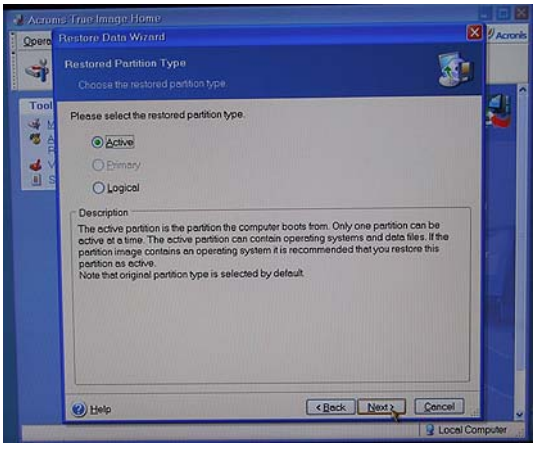

Acronis True Image Home
Restore Data Wizard
Restored Partition Type
Choose the restored partition type.
Please select the restored partition type.
Active
Primary
Logical
Description
The active partition is the partition the computer boots from. Only one partition can be active at a time. The active partition can contain operating systems and data files. If the partition image contains an operating system it is recommended that you restore this partition as active.
Note that original partition type is selected by default.
Help
< Back
Next >
Cancel
Local Computer

Figure A-34

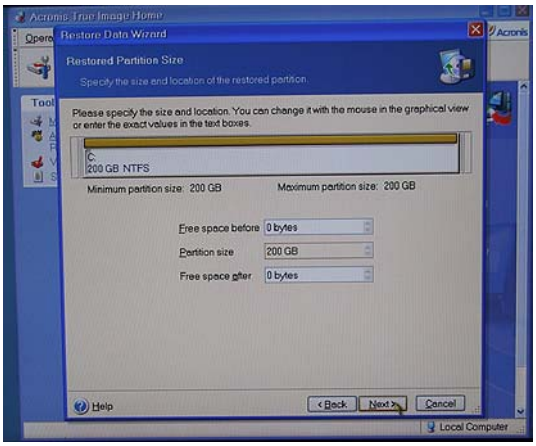

Acronis True Image Home
Restore Data Wizard
Restored Partition Size
Specify the size and location of the restored partition.
Please specify the size and location. You can change it with the mouse in the graphical view or enter the exact values in the text boxes.
C:
200 GB NTFS
Minimum partition size: 200 GB
Maximum partition size: 200 GB
Free space before: 0 bytes
Partition size: 200 GB
Free space after: 0 bytes
Help
< Back
Next >
Cancel
Local Computer

Figure A-35

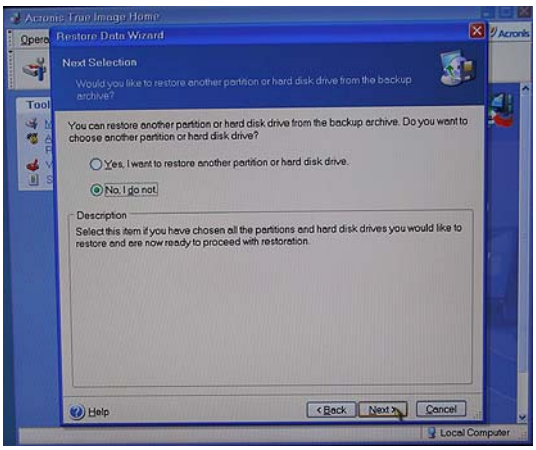

Acronis True Image Home
Restore Data Wizard
Next Selection
Would you like to restore another partition or hard disk drive from the backup archive?
You can restore another partition or hard disk drive from the backup archive. Do you want to choose another partition or hard disk drive?
Yes, I want to restore another partition or hard disk drive.
No, I do not.
Description
Select this item if you have chosen all the partitions and hard disk drives you would like to restore and are now ready to proceed with restoration.
Help
< Back
Next >
Cancel
Local Computer

Figure A-36

Acronis True Image Home
Restore Data Wizard
Restore operation options
You can set up restore options. Choose the category in the tree and set the options in the right pane.
Additional settings
Additional settings
You can configure additional settings for the data restoration process:
Validate backup archive before restoration
Help
< Back
Next >
Cancel
Local Computer

Figure A-37

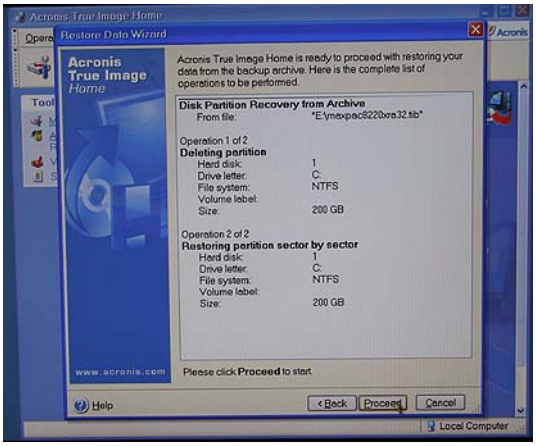


Figure A-38

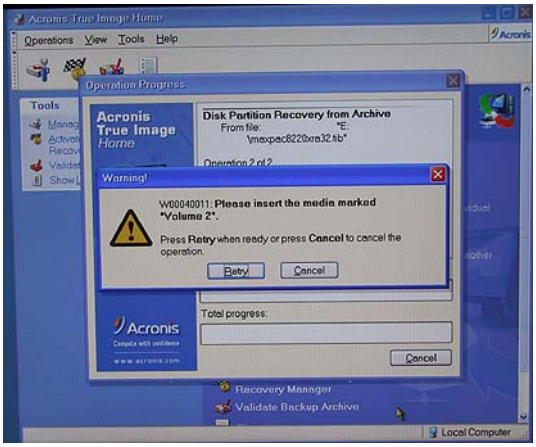


Figure A-39

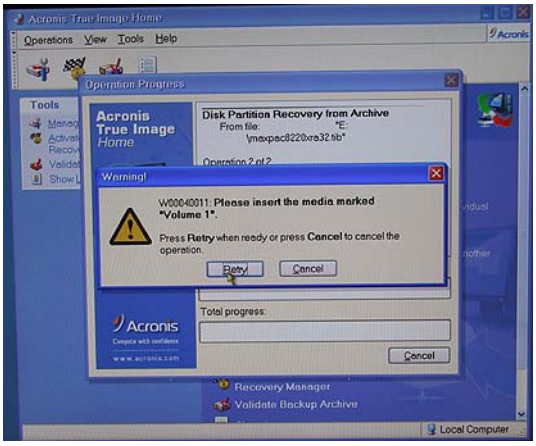


Figure A-40

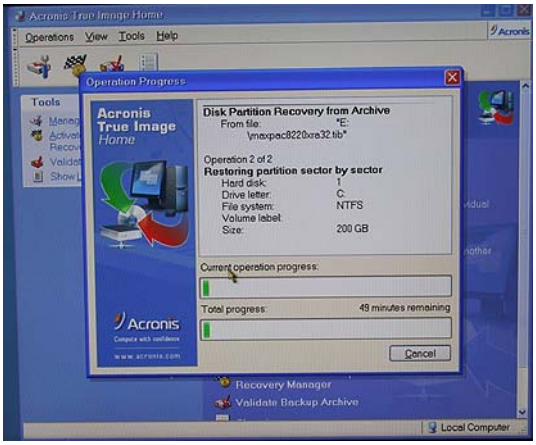


Figure A-41

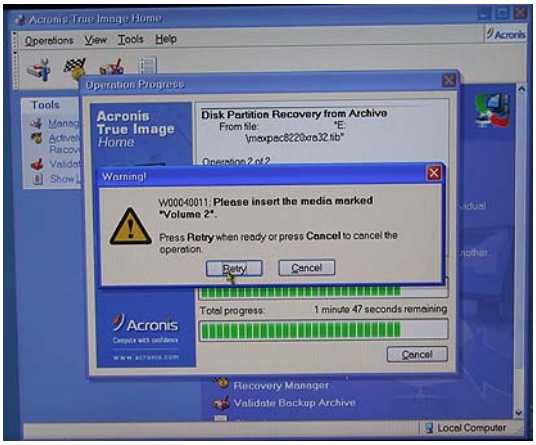


Figure A-42

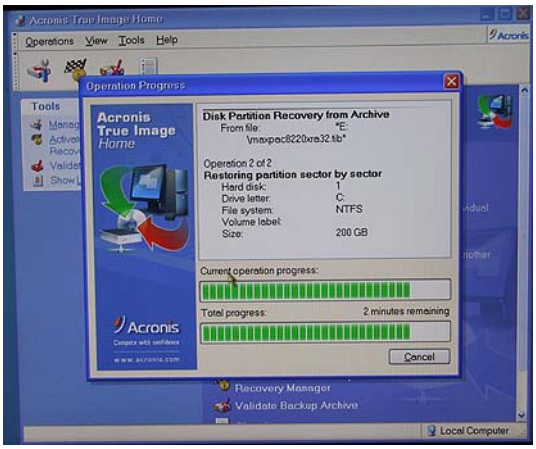


Figure A-43

Figure A-44

Appendix B: Regular System Maintenance

Cleaning Interior Dust

You should periodically check your system for the presence of interior dust and clean the enclosure as required. (The frequency of such checks will be strongly dependent on your situation. Perhaps not surprisingly, systems deployed in a desert environment, for example, will typically require such cleaning more often than systems located in less rigorous settings.)

In order to clean the interior you should perform the following steps:

- Shut down the system and unplug the power cord.
- Open the display assembly into its service position as discussed in chapter 3.
- Using a commercially available compressed air PC cleaning product, blow the accumulated dust out of the unit. Pay special attention to air passages, grills, and heat sinks.
- Close up the system.

Replacing the Lithium Battery

A Lithium Ion battery is included with the system motherboard. This battery is used for the Real Time Clock circuit. The expected lifetime of the battery is approximately 5 years.

There is a danger of explosion if this battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the motherboard manufacturer. Dispose of used batteries according to the manufacturer's instructions.

In order to replace the lithium battery you should perform the following steps:

- Shut down the system and unplug the power cord.
- Open the display assembly into its service position as discussed in chapter 3.
- Remove and replace the lithium battery according to the manufacturer's instructions.
- Close up the system.

Maintaining (Cleaning) the "Baghdad Filters"

1) Observe the two filters on the left-hand and right-hand sides of the main chassis (Figures B-1 and B-2, respectively). These filters are located over the air intake vents (any uncovered fans act as exhausts).

Figure B-1

Figure B-2

Each of these filters are attached to the main chassis using a combination of a flange on the side of the filter facing the back of the chassis and a Velcro strip on the side of the filter facing the front of the chassis for single-screen MaxPac 8230XRA1. Dual and Triple-screen MaxPac 8230XRA2/3 require the outer flange to be removed (by using the knurled screw). Now the filter element can be removed for cleaning.

The filters should be cleaned as mandated by local conditions (a good rule of thumb is when the filters look physically dirty). The following discussions are based on the left-hand filter. The same actions apply to the right-hand filter. It is more efficient to clean both filters at the same time.

2) Starting with the filter on the left-hand side of the chassis, break the filter free of the Velcro on the side of the filter facing the front of the chassis (Figure B-3) for single-screen MaxPac 8230XRA1 . Dual and Triple-screen MaxPac 8230XRA2/3 require the outer flange to be removed (by using the knurled screw). Now the filter element can be removed for cleaning.

Figure B-3

Figure B-4

3) Unscrew the knurled knob holding the left-hand filter assembly as shown in Figure B-4 (this may require the use of a Phillips #2 screwdriver).

4) Open the assembly as illustrated in Figure B-5.

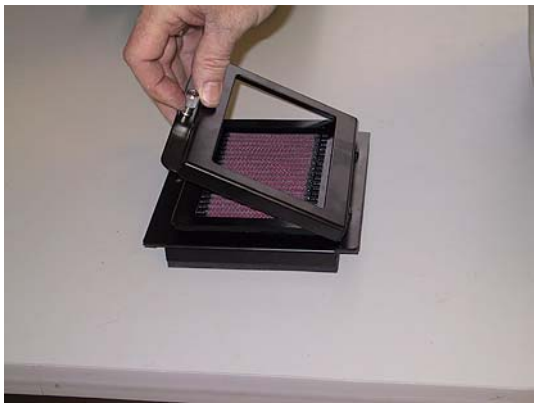


Figure B-5

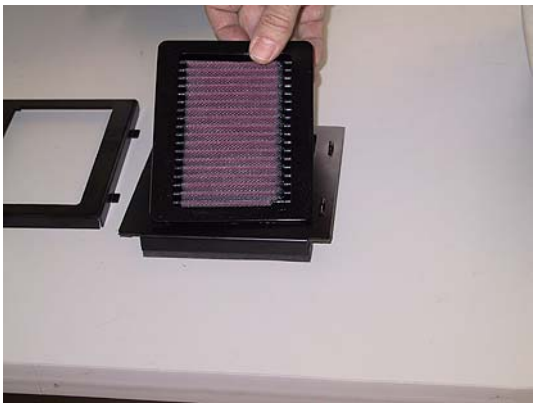


Figure B-6

5) Remove the filter element as illustrated in Figures B-6 and B-7.

Figure B-7

Figure B-8

6) The filter recharge kit (MaxVision Part Number 228-0002-0) comprises a pump spray cleaner and an aerosol spray containing replacement oil (Figure B-8). Place the filter element on a working surface that is protected by some form of absorbent, disposable material (Figure B-9).

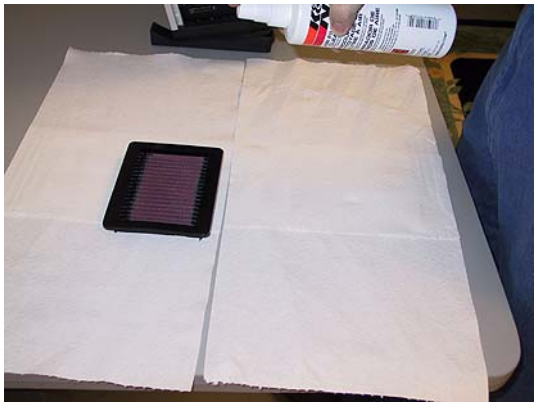


Figure B-9

Figure B-10

7) It is recommended that you first tap the filter element on the work surface to dislodge any large embedded dirt particles, and then gently brush it with a soft bristle brush. Next, spray the cleaner

onto both sides of the filter element (Figure B-10), leave for ten minutes, and then rinse the element using a low-pressure water source (tap water is OK).

Note: Always apply the water from the "clean" side of the filter element.

Note: The use of other cleaning materials (including high-pressure air) may damage and/or reduce the effectiveness of the filter element.

8) Shake off any excess water and then let the filter element dry naturally.

9) Spray replacement oil on the "dirty" side of the filter element (Figure B-11). Keep the nozzle about three inches from the filter. Note that the cotton in the filter element will absorb and distribute the oil into an even film; thus, it is important to use only a single pass for each area of the filter and to not over-spray the filter.

Note: The filter oil is a compound of mineral and animal oil blended with special polymers to form a very efficient barrier. Red dye is added to show just where you have applied the oil (this red color will eventually fade, but the oil will remain and filter the air).

Figure B-11

Figure B-12

10) Let the filter stand for 20 minutes and then touch-up any spots that do not visibly show the red dye contained in the oil.

11) Bring together the elements forming the filter assembly and secure using the knurled screw as shown in Figures B-12 and B-13 (ensure that the oil side of the main filter element faces the side of the assembly with the knurled screw).

12) Reattach the filter assemble to the main chassis by first slipping the flange of the assemble under the silver strip at the rear of the chassis (Figure B-14) and then pressing the front edge of the filter assemble so as to mate the Velcro.

13) Repeat (or perform at the same time) the above steps for the right-hand filter (Figure B-15).

Resetting the Motherboard BIOS

In the event that your motherboard BIOS is corrupted or lost completely (this could be caused by failure of the lithium battery, electrostatic discharge, a major power surge, or user error), you may reset the BIOS as follows:

1) Power the system down completely (a simple **Start > Turn Off Computer > Restart** command is typically NOT recommended or sufficient) and then initiate the power-up sequence as discussed in Chapter 1.

2) Due to extensive system initialization and verification checks, the BIOS boot-up process can take a significant amount of time, especially in the case of systems with large amounts of memory. In the case of a system containing 8 GB of RAM, for example, it can take 45 seconds before all three LEDs above the numerical keypad on the keyboard flash. This is your cue to enter the BIOS setup utility, which you achieve by pressing the <Delete> key on the keyboard. Note that the system may not immediately respond to your pressing this key, which may be buffered until higher priority initialization tasks have been completed. Once the system does respond to this key, you will be presented with the **System Overview** screen of the **BIOS Setup** utility as shown in Figure B-1.

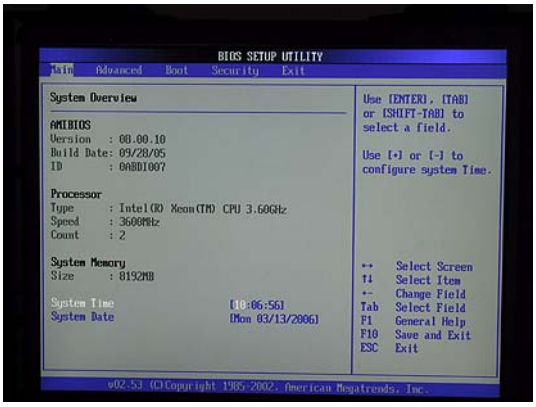


Figure B-1

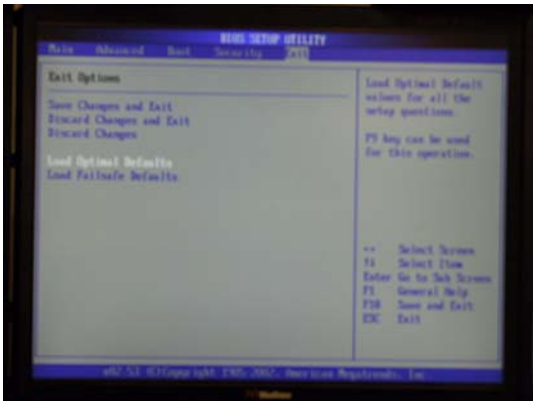


Figure B-2

3) Use the left/right arrow keys to select the **Exit** tab, and then use the up/down arrow keys to highlight the **Load Optimal Defaults** item (Figure B-2).

4) Press the <Enter> key to select this item. You will be presented with a confirmation screen as shown in Figure B-3.

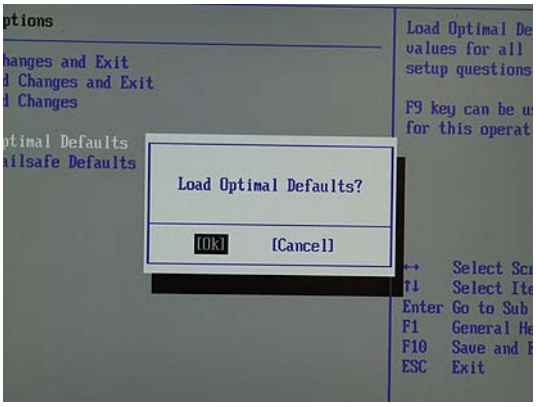


Figure B-3

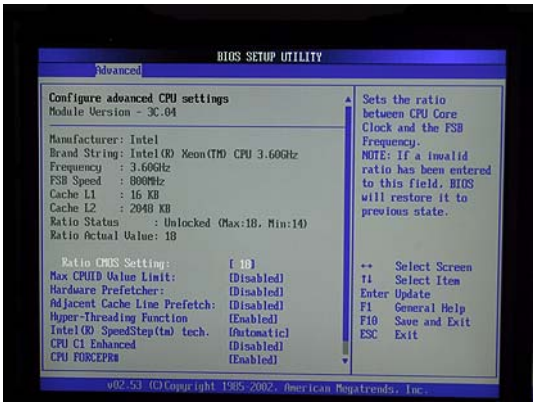

BIOS SETUP UTILITY
Advanced
Configure advanced CPU settings
Module Version - 3C.04
Manufacturer: Intel
Brand String: Intel(R) Xeon(TM) CPU 3.60GHz
Frequency : 3.60GHz
FSB Speed : 800MHz
Cache L1 : 16 KB
Cache L2 : 2048 KB
Ratio Status : Unlocked (Max:18, Min:14)
Ratio Actual Value: 18
Ratio CMOS Setting [18]
Max CPUID Value Limit: [Disabled]
Hardware Prefetcher: [Disabled]
Adjacent Cache Line Prefetch: [Disabled]
Hyper-Threading Function [Enabled]
Intel(R) SpeedStep(tm) tech. [Automatic]
CPU C1 Enhanced [Disabled]
CPU FORCEPR# [Enabled]
Sets the ratio between CPU Core Clock and the FSB Frequency.
NOTE: If a invalid ratio has been entered to this field, BIOS will restore it to previous state.
↔ Select Screen
↑↓ Select Item
Enter Update
F1 General Help
F10 Save and Exit
ESC Exit
v02.53 (C)Copyright 1985-2002, American Megatrends, Inc.

Figure B-4

5) Use the arrow keys to select the **OK** option, and then press the <Enter> key to select this item and to load the optimal defaults for your system.

6) Press the <F10> key to save and exit the BIOS. This will cause a confirmation form to appear on the screen. Use the arrow keys to highlight the **OK** option, and then press the <Enter> key to save your changes to CMOS and exit the BIOS Setup utility.

Appendix C: Screws and Required Tools

Screws

The various screws used in a MaxPac 8230-Series X-Class system are illustrated approximately full size as shown in Figure C-1

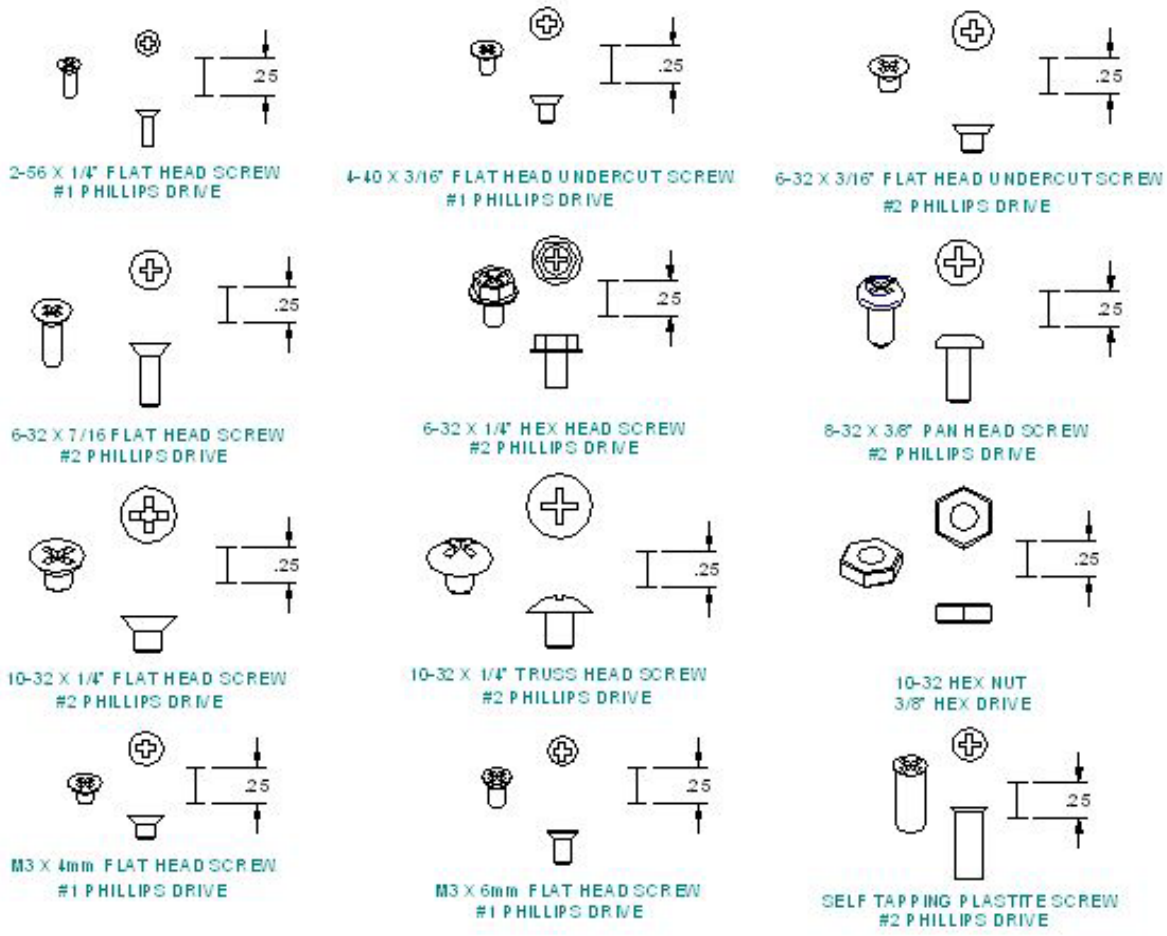

.25
2-56 X 1/4" FLAT HEAD SCREW
#1 PHILLIPS DRIVE
4-40 X 3/16" FLAT HEAD UNDERCUT SCREW
#1 PHILLIPS DRIVE
6-32 X 3/16" FLAT HEAD UNDERCUT SCREW
#2 PHILLIPS DRIVE
6-32 X 7/16 FLAT HEAD SCREW
#2 PHILLIPS DRIVE
6-32 X 1/4" HEX HEAD SCREW
#2 PHILLIPS DRIVE
8-32 X 3/8" PAN HEAD SCREW
#2 PHILLIPS DRIVE
10-32 X 1/4" FLAT HEAD SCREW
#2 PHILLIPS DRIVE
10-32 X 1/4" TRUSS HEAD SCREW
#2 PHILLIPS DRIVE
10-32 HEX NUT
3/8" HEX DRIVE
M3 X 4mm FLAT HEAD SCREW
#1 PHILLIPS DRIVE
M3 X 6mm FLAT HEAD SCREW
#1 PHILLIPS DRIVE
SELF TAPPING PLASTITE SCREW
#2 PHILLIPS DRIVE

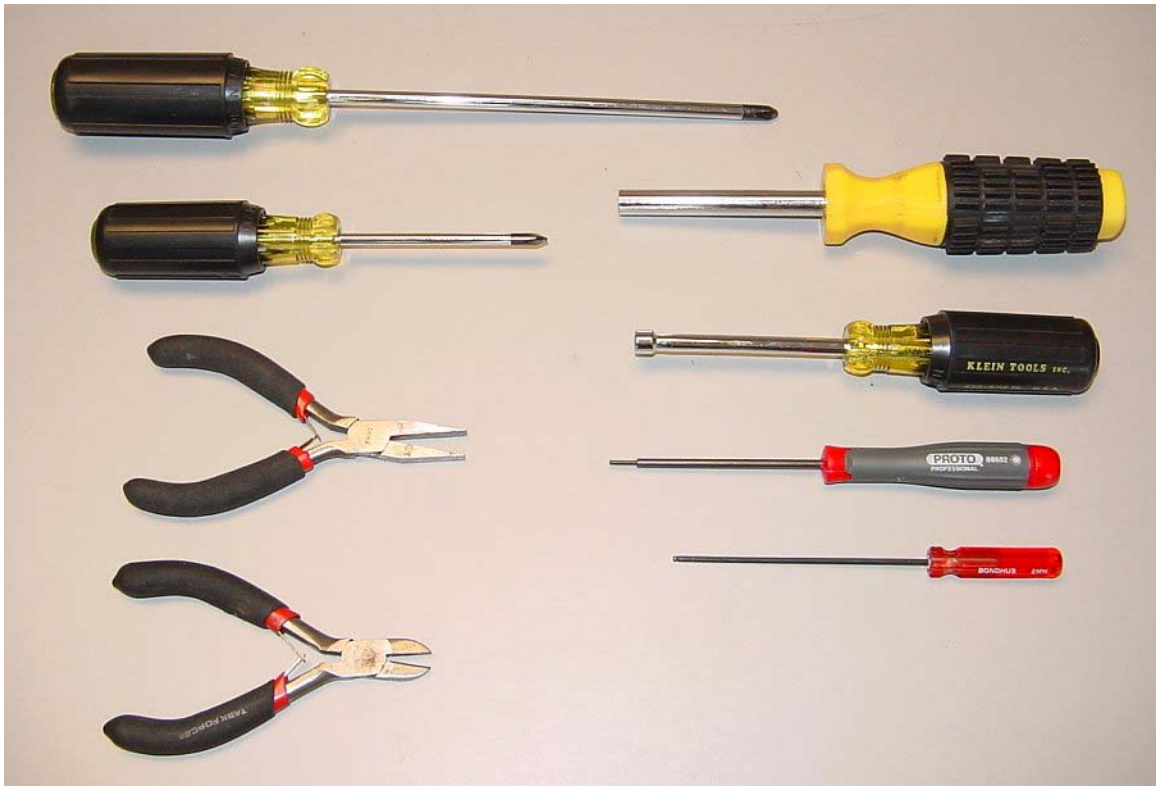
Figure C-1. Screws used in MaxPac 8220-Series X-Class systems

Required Tools

Note: It is extremely important that you use only high-quality tools so as to avoid any slippage and stripping of screw heads and threads.

Note: It is highly recommended that you use magnetized screwdrivers so as to prevent screws from dropping inside the case and/or aiding in retrieving them if they do drop inside the case. (If your screwdriver isn't already magnetized, you can make it so by repeatedly "stroking" the blade with a permanent magnet. Using a high quality universal screwdriver with replaceable Phillips #1 and #2 bits is a good idea to ensure that your bits are always in excellent condition.

Most of the module replacement and upgrade procedures discussed in this chapter can be performed using only a pair of #1 (small tip) and #2 (regular tip) Phillips screwdrivers.



For some procedures, however, needle-nose pliers will be of use, and you may have to cut cable ties on occasion.

Also, in order to replace a display or the video distribution board you will need an appropriate Allen key/tool.

Also, in order to remove the external video front plate assembly, you will need an appropriate Allen key/tool.

Appendix D: Contacting MaxVision Support (RMA and Serial Numbers)

Repairing/Replacing Products/Accessories

MaxVision will repair or replace products/accessories due to defects in material or workmanship, or any failure of the hardware system to conform to written specifications. Warranty repairs will be performed at MaxVision's service center. Any replacement parts/products shall be new or refurbished. Any repaired or replaced product will not extend the original warranty term of the product. Additionally, this warranty period will not be extended as a result of the purchase of any additional parts/products from MaxVision Corporation.

Contacting Technical Support and RMA Numbers

During the warranty period, MaxVision will provide technical support for hardware diagnosis via email (maxvision.support@maxvision.com or support@maxvision.com) or the technical support and customer service hotline (800-533-5805). If MaxVision's technical support determines that the product is defective, MaxVision will issue a *Return Material Authorization (RMA)* number to the customer. The customer is required to ship the product referencing the RMA number on the outside of the original (or equivalent) packaging with a copy of MaxVision's RMA form if provided. The return shipment must be sent insured and prepaid to:

MaxVision Corporation
495 Production Avenue
Madison, AL 35758
USA

Attn: Support

MaxVision will ship the repaired or replaced product to the customer with freight prepaid if the customer's address is within United Stated of America (excluding Alaska, Hawaii, Puerto Rico and U.S. possessions). Shipments to other locations will be shipped at the customers expense. MaxVision must receive notice of all events before the warranty period expires. NOTE: MaxVision will not be responsible for data on the hard-disk drive. Before you ship the product(s) to MaxVision, please back up your data from the hard-disk drive(s)or any other storage device(s) in the product(s).